

Chemical Week

March 10, 1956

Price 35 cents



► **SOVIET LEADERS** boost chemical production, threaten U. S. export markets p. 28

Cost and corrosion factors make direct oxidation the favored ethylene oxide process p. 38

Explosive question: Do we need federal control of compressed gas cylinder labeling? p. 54

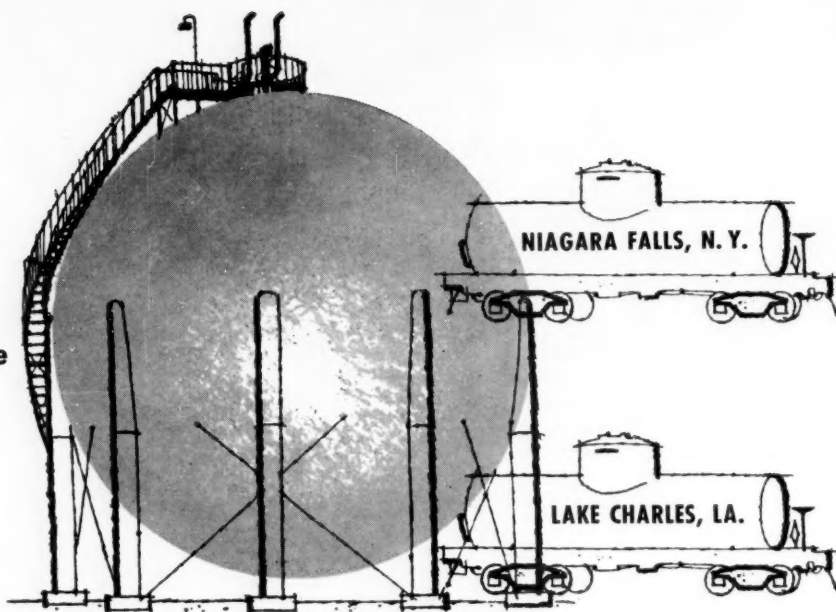
Hot market fight brews as latex, vinyl and urethane resilient foams expand p. 62

Tough alkyds and acrylics add new fuel to hot competition in auto paints p. 73

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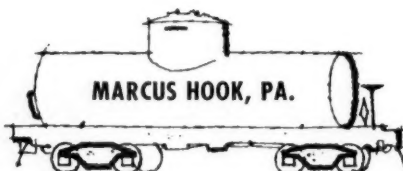
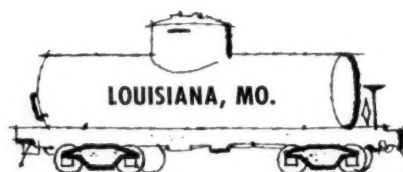
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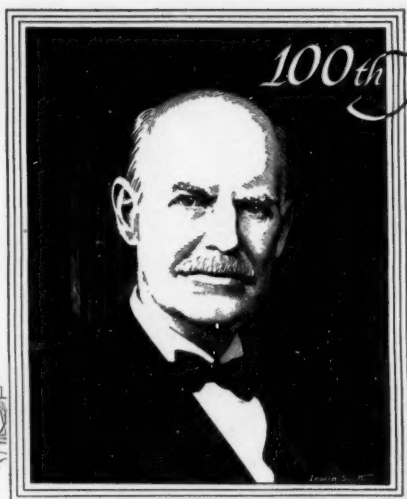
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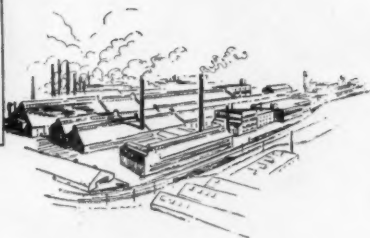
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100th Anniversary

INVENTOR
SCIENTIST
INDUSTRIALIST



this was genius...

EDWARD GOODRICH ACHESON

Yes, this was genius.

Thomas A. Edison knew it. In paying tribute upon the occasion of Doctor Acheson's passing, he said "...as a former associate I know the world loses a great genius."

Leo Hendrik Baekeland knew it. He remembered him "as a man who combined a most fertile brain with great strength of conviction."

Walter B. Pitkin knew it. This famous psychologist said "As he created his place in our civilization so does that place pass with him. None shall fill it."

And the press knew it. They used in their editorials such phrases as "world's acclaim of a genius," "one of the geniuses of his time," and "the loss of an inventive genius."

But what makes genius?

Employing a mixture of carbon, sand, salt, and sawdust in a simple but effective electric furnace, made up of a few strands of wire, a carbon rod, and a plumber's bowl, Edward Goodrich Acheson was able to bring into being a mass of scintillating crystals rivaling many gems in splendor and almost matching the diamond in hardness. These highly abrasive crystals he crushed and made into grinding wheels, and these wheels, in turn, were used to shape metals and make machines. Called "Carborundum" by Acheson and silicon carbide by the chemist, this new material did its job so well that it is credited with making possible today the mass production of automobiles, tractors, and countless other mechanisms.

Possibly silicon carbide could be made better—harder or sharper. To this end Acheson subjected silicon carbide to higher temperatures for longer periods; what he obtained was not a harder substance but, instead, one of the softest—pure graphite. The extreme conditions to which he had exposed his jewels of industry brought about their disintegration, the

silicon passing off as vapor and the carbon remaining as a soft, unctuous residue. Manufactured graphite, destined to be of far-reaching importance, became another of Acheson's contributions to industry.

Unquenchable curiosity, coupled with the indomitable spirit that was his, led him to uncover means of preparing this new product of the electric furnace in the form of plates and cylinders. Put to work as electrodes, these soon revolutionized electrochemical and electrometallurgical operations. Acheson had now made commercially feasible the production of new families of chemicals and laid the groundwork for the present efficient manufacture of steel and alloys.

During Acheson's painstaking efforts to produce graphite crucibles he experimented with many clays for use as binding agents—and he learned much about them—so much in fact that he was able to explain why the ancient Egyptians used straw in their brick making and what caused the formation of the deltas of the Nile and Mississippi. Most important, he discovered a method of rendering graphite colloidal.

Colloidal graphite in modern industry plays a role that is varied and complex, its unique properties finding utility in such dissimilar fields as lubrication, electronics, metalworking, and lithography, to name a few. The techniques originated by Acheson for colloidal dispersing graphite are being applied to other solids including carbon blacks, pigments, and minerals.

To those of us in the companies identified with Doctor Acheson, his perseverance and achievement are an inspiration. We are proud to offer this tribute to his genius on the 100th anniversary of his birth.

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elements form similar heteropolymolybdates. Many of their heavy metal salts are soluble in both water and organic solvents. This property may be important in sequestering or extracting metals.

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Chemical Week

TOP OF THE WEEK

March 10, 1956

Are wide-spectrum antibiotics prices too high? Federal Trade Commission is putting up \$100,000 to prove they arep. 15

Texas City Chemicals has come a cropper. Here's why, and here's what happens nextp. 17

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NITROMETHANE
 CH_3NO_2

NITROETHANE
 $\text{CH}_3\text{CH}_2\text{NO}_2$

1-NITROPROPANE
 $\text{CH}_3\text{CH}_2\text{CH}_2\text{NO}_2$

2-NITROPROPANE
 $\text{CH}_3\text{CHNO}_2\text{CH}_3$

THE

Nitroparaffins

UNSURPASSED FOR PRODUCING
USEFUL DERIVATIVES



PRIMARY AMINES
 $\text{CH}_3\text{CHNH}_2\text{CH}_3$



NITROHYDROXY COMPOUNDS
 $\text{CH}_3\text{OHC}(\text{C}_2\text{H}_5)\text{NO}_2\text{CH}_2\text{OH}$



AMINOALCOHOL COMPOUNDS
 $\text{CH}_3\text{C}(\text{CH}_3)\text{NH}_2\text{CH}_2\text{OH}$



ALKYL NITRONIC ACIDS
 $\text{CH}_3\text{CH}_2\text{CHONO}_2$



DIAMINES
 $(\text{CH}_3)_2\text{CNH}_2\text{CH}_2\text{NHC}_2\text{H}_5$



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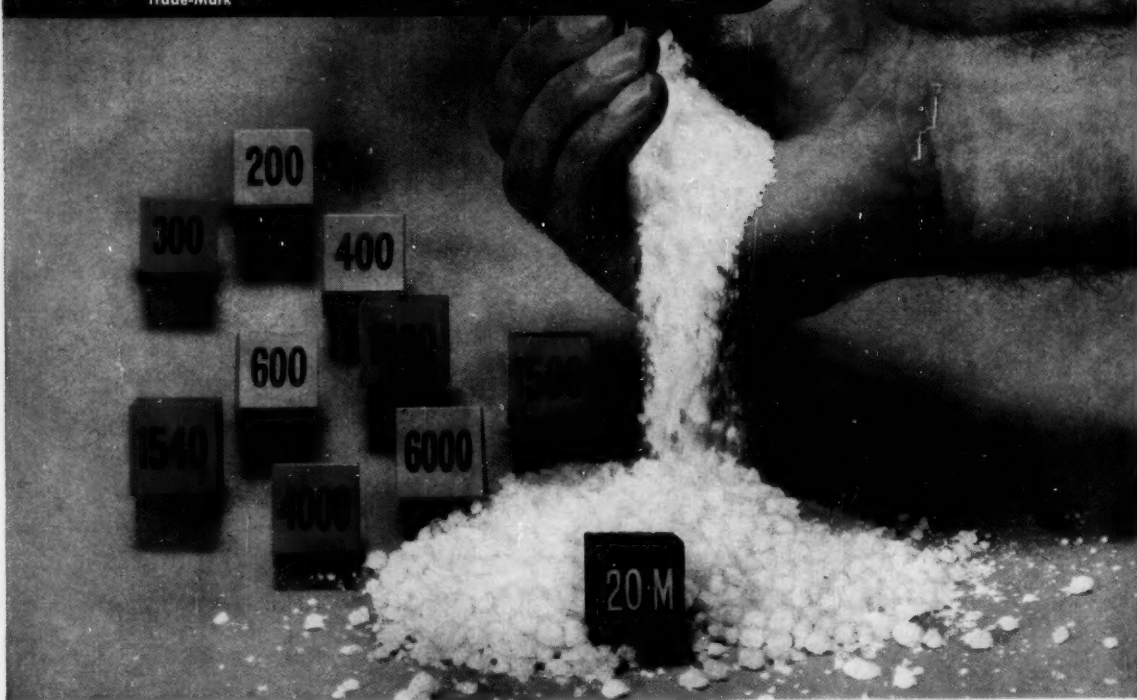
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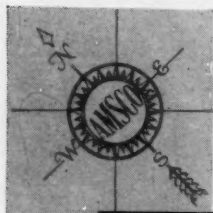
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OPINION....

Only a Short Wait

TO THE EDITOR: I find your monthly *CW* Reports especially useful. The ones I like the best are the roundups on commodities—like plastics, plasticizers, synthetic detergents, and so on . . . I'm in the paint business, and I would like to see a report on protective coatings, including the present state of the market and indications for the future. . . .

JAMES J. MCCARTHY
Cincinnati, O.

Reader McCarthy won't have long to wait. Such a report has been in preparation, will appear in next week's issue.—ED.

Terminology Matter

DEAR MR. JOHNSON: Wow, oil must be high in the Pacific Northwest (*Feb. 11*)! I figure that \$100,000 per year for 8.2 mcf./day of gas is equivalent (1 bbl. oil = 6 mcf. gas) to \$2,000 per barrel for oil.

Should your figure on the Mead reduction plant consumption be upped by 10%?

HOWARD MATTHEWS
Plainfield, N. J.

It's merely a matter of terminology. To us "Mcf" means "thousand cubic feet" and "mcf" means "million cubic feet," but it's a confusing distinction. Hereafter we'll make it clearer.—ED.

Royalty Clear-Up

DEAR SIR: The item you carried (*Dec. 24*) relative to the settlement between Socony Mobil Oil Co. and the Houdry Process Corp., regarding patent immunities and licensing rights within the field of catalytic cracking, has occasioned some confusion.

Your report stated that as part of the settlement "Socony will pay to Houdry royalty fees of up to \$25 per barrel of daily capacity on TCC

CW welcomes expressions of opinions from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to:
H. C. E. Johnson, Chemical Week,
330 W. 42nd St., New York 36,
N.Y.

licenses granted by Socony during the next five years . . . it's expected that the royalty provision will tend to discourage further TCC licensing, which Houdry felt was unfair use of technology it had helped develop."

This is not the case. Our past and present royalty rate is \$50 per barrel of paid-up licensed capacity. We have agreed, on any new TCC licenses granted by us during the next five years, to pay Houdry \$12.50 per barrel of licensed capacity. This will in no way tend to discourage further licensing by us.

S. D. DALTON
Socony Mobil Oil Co., Inc.
New York

Latin Market?

DEAR MR. JOHNSON: Noted . . . your story (*Jan. 21*) pointing to the use of polyethylene as a substitute material for glass in making greenhouses.

Here in the coastal area of Peru, where there's no rain, but a dust problem, this polyethylene sheeting might lend itself excellently for use in factory construction . . .

THOMAS N. FOX
Managing Director
Intradevco, S. A.
Lima, Peru

No Toxicity

DEAR MR. JOHNSON: Your recent article (*Feb. 25*) on our newly developed Mercadium Reds refers to the subacute oral toxicity tests, which were not completed before your article was written.

I am happy to report that these tests are now completed, and copies of the report made by Foster D. Snell Inc. to us on the subacute and acute oral toxicity tests are now available. These tests confirm our original opinion, and indicate absolutely no toxicity. Copies of the complete report are available upon request to Imperial Paper and Color Corp. . . . We feel that as long as these tests are mentioned in your article, the latest information should be available to your readers. . . .

S. L. KARPELES
General Manager
Pigment Color Division
Imperial Paper and Color Corp.
Glens Falls, N.Y.

March 10, 1956 • Chemical Week

The man who could do anything— once!

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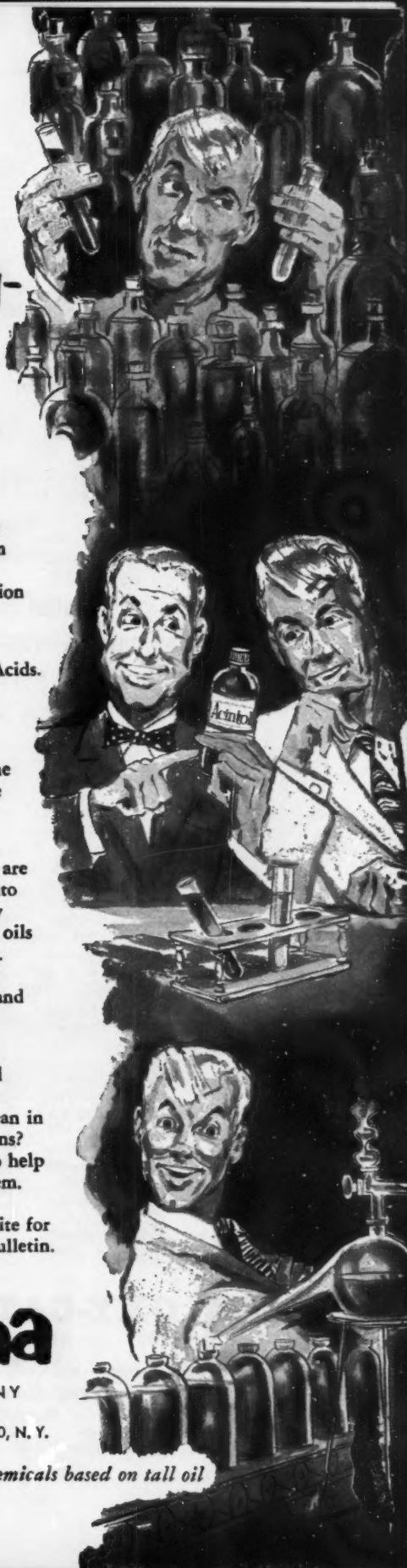


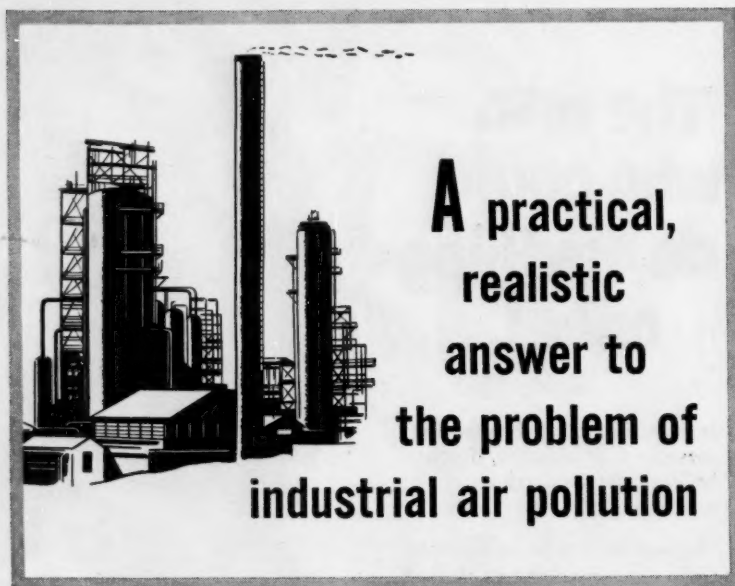
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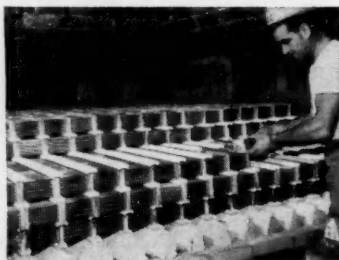
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when it is in the blueprint stage. But your engineers, working with ours, can effectively install Oxycats in any existing plant. If air pollution is a problem in your operation—if foul-smelling, irritating fumes and odors are costing you neighborhood good will—Houdry Oxidation Catalysts present a solution you cannot afford to overlook. Write on your business letterhead for complete information now.



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Synthetic Organic Chemical Manufacturers' Assn., luncheon, Palm Terrace Suite, Hotel Roosevelt, New York, March 13.

American Society of Mechanical Engineers, aviation conference, sessions on high-temperature rocket engines, Hotel Statler, Los Angeles, March 14-16.

American Water Works Assn., Southeastern meeting, Bon Air Hotel, Augusta, March 18-21; Illinois meeting, LaSalle Hotel, Chicago, March 21-23.

American Institute of Mining & Metallurgical Engineers, reactive metals conference, Hotel Statler, Buffalo, March 19-21.

Society of Plastics Industry, 13th annual Pacific Coast Section Conference, St. Francis Hotel, San Francisco, March 27-April 2.

Material Handling Institute Inc., spring meeting, Edgewater Beach Hotel, Chicago, April 3.

American Chemical Society, 129th national meeting, Dallas, April 8-13.

American Pharmaceutical Mfg. Assn., annual meeting, Boca Raton Club, Boca Raton, Fla., April 9-11.

Midwest Research Institute, symposium for management on applications of analog computers, Hotel Phillips, Kansas City, Mo., April 10-11.

Metal Powder Assn., 12th annual meeting, Hotel Cleveland, Cleveland, April 10-12.

Council for Agricultural & Chemurgic Research, annual conference, Congress Hotel, Chicago, April 10-12.

American Institute of Chemical Engineers and University of Pennsylvania, 4th annual meeting on "Experience in Industry," Museum Auditorium, Philadelphia, April 17.

CW Report



Next Week . . .

Report author Harry Burrell, from the inside of the coatings industry, tells CW readers how to sell this \$700-million market.

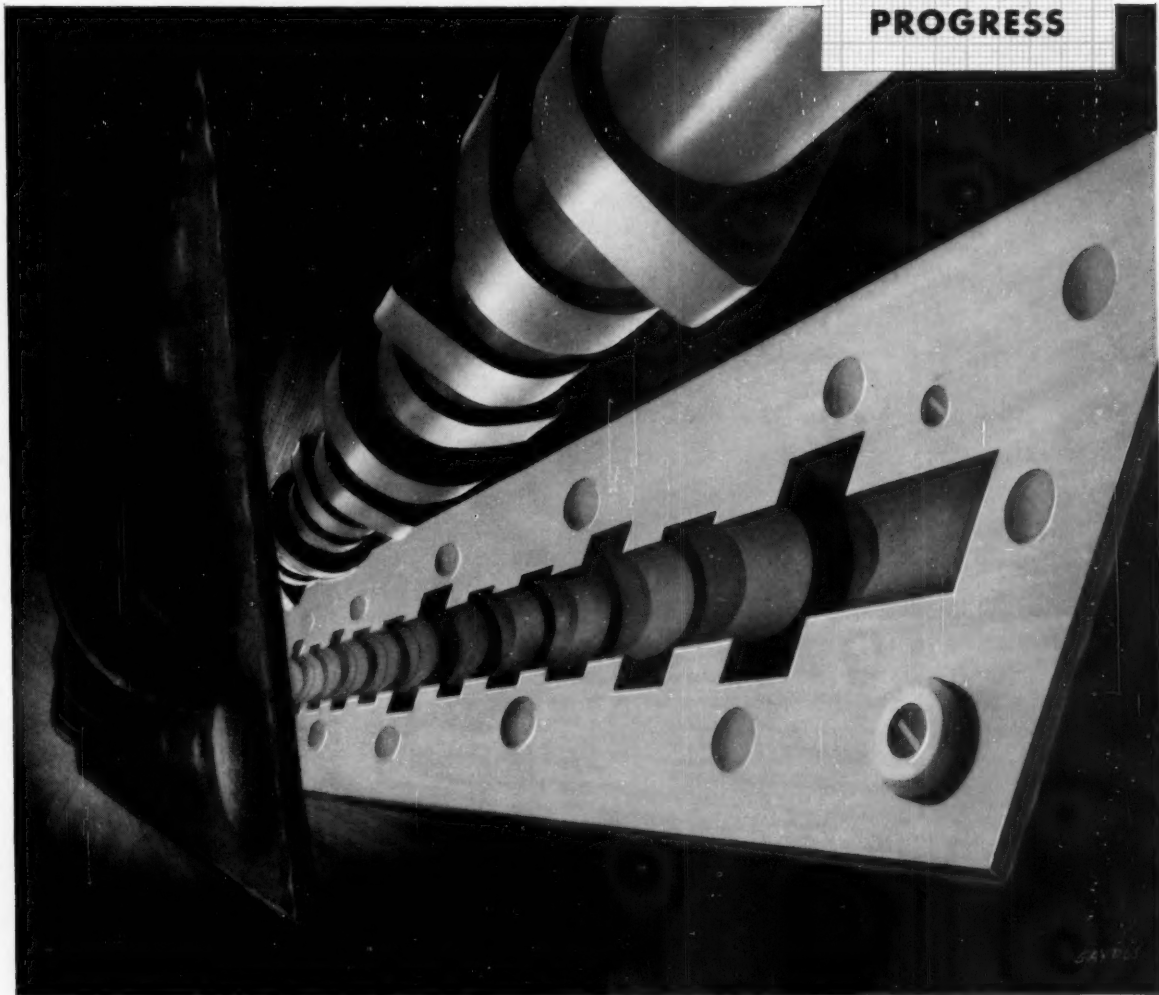
Q. *Could chemical science help make possible the incredibly thin sand molds required by the new shell-molding process?*

A. RESINS THAT HATCH CASTINGS FROM WAFER-THIN SHELLS

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In fact, General Electric chemical research came up with not one—but three—shell-molding products: a binding resin to form the shells themselves; a silicone release agent to free shells from hot patterns; and a bonding resin to cement shell halves together.

Today, more and more foundries are taking advantage of shell molding—thanks to General Electric research

in resins. It's another example of progress for all—through General Electric *chemical* progress.

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Business

Newsletter

CHEMICAL WEEK

March 10, 1956

There'll be some real aerosol packaging news coming out of the National Packaging Exposition in Atlantic City next month. It's a self-sufficient aerosol cold-fill unit, which will be publicly unveiled by Mojonner-Dawson, Chicago packaging equipment manufacturer.

The unit—a complete “package,” which will fill up to 60 cans or glass bottles per minute—will cost under \$10,000. At the price, it's sure to interest many specialties makers who have used custom-fillers.

Also in specialties, look for a push on a foam polish for white shoes. A Midwest manufacturer is quoted by the trade as saying that such a product will be his hottest item this year.

Raw material availability highlights the week's expansion plans. Take ethylene supplies, for example. Simultaneous with the first official acknowledgment of Esso Standard Oil's plans to erect an ethylene unit at its Bayway, N.J., refinery (*CW*, Oct. 1, '55, p. 76) was a decision by Koppers to build a polyethylene plant in New Jersey.

Koppers will use ethylene piped from Bayway in producing some 30 million lbs./year of Ziegler-type polyethylene at a unit to be located in Woodbridge Township, Middlesex County.

Other users of Esso's ethylene will include Hercules (for its low-pressure polyethylene plant to be built at Parlin, N.J.) and, reputedly, General Aniline & Film, for its ethylene oxide-base detergents.

Esso has already contracted to sell the entire output of the plant.

Another such complex may be abuilding in Texas. Phillips Petroleum has contracted to buy a 950-acre site on the Houston ship channel. Cost: nearly \$3 million. Phillips has no present plans to build a production plant of its own on the site; instead, it will install a water treatment plant, rail spurs, electric power lines and other utilities, and resell the properties to other users.

Why is Phillips interested in industrial development? Mainly to get new outlets for its natural gas and refinery by-products. Observers point out that intrastate gas sales could never come under federal regulation—as would sales to interstate pipelines. And Phillips has major natural gas reserves in Texas.

One of Phillips' first customers may be Celanese, which has been scouting the Houston area for a plant site for its projected polyethylene unit. Celanese is licensed under Phillips patents.

Elsewhere on the expansion front—

Increase in polyethylene production capacity to 40 million lbs. is planned by Texas Eastman at its Longview, Tex., plant.

A \$2-million, 70-tons/day methanol unit will be erected at Louisiana, Mo., by Hercules Powder. About two-thirds of the production will be captive, going to the adjoining pentaerythritol unit, now under construction.

Coal chemical recovery will be increased by Wisconsin Steel Works, a wholly owned International Harvester subsidiary. It will spend \$5.2 million to modernize and increase coke capacity. When its revamping is complete, it will charge 3,000 tons/day of coal, producing 2,000 tons coke, 35 tons of ammonium sulfate, 1,000 lbs. of naphthalene, 28,000 gal. of tars, 11,000 gal. of light oils; the latter will process into about 9,000 gal. of light oil products.

Business Newsletter

(Continued)

A Frasch extraction plant will be built by Texas Gulf Sulphur to recover sulfur from the Fannett salt dome in Jefferson County, Texas. It will be the second such plant for Texas Gulf in the county.

Shell Oil of Canada will build plants at Montreal to produce methyl ethyl ketone and secondary butyl alcohol. When completed, the plant will be more than able to supply all Canadian needs for the materials.

Also from Canada comes the report that Canadian Chemical Co.'s cellulose acetate facilities in Alberta will be back in full operation this week. They've been out of operation since Dec. 5, following an explosion and fire in the acid recovery unit.

Municipalities this week are encouraging chemical expansion. Officials of two Texas cities, Orange and Port Neches, have worked in the opposite direction to that taken by leaders in Deer Park, Tex. (*CW Business Newsletter*, Feb. 25), when the latter annexed plant sites occupied by Diamond Alkali, Rohm & Haas and Lubrizol.

The Orange city commission, in annexing new property, specifically exempted acreage along the city's "chemical row." And at Port Neches, Mayor Cecil Holstead named a five-citizen committee to study a proposal for de-annexation of 60 acres of land. Neches Butane Products Co., which supplies butadiene for the synthetic rubber plants of Texas-U.S. Chemical and Goodrich-Gulf Chemicals, is optioning this within-city-limits property near its present plant for a possible expansion.

Also on the industrial development front is a report on synthetic fiber plant location. The report, by MIT's Center for Urban and Regional Studies for the Puerto Rican Economic Development Administration, finds the island a more economic plant site than Mobile, Ala., Chattanooga and Memphis, Tenn., Wilmington, N. C., Institute, W. Va., and Boston, Mass.

But off the list of expansion site-seekers now is Harbor Plywood Corp. (Aberdeen, Wash.). The company, which produced less plywood in 1955 than in 1950, has filed a \$35-million damage suit in Seattle Federal District Court against Long-Bell Lumber Co. Long-Bell is the company that may be merged into International Paper (*CW Business Newsletter*, March 3).

Harbor's management charges that Long-Bell, because of its ownership of 43,849 shares (of the 1.5 million shares outstanding) of Harbor stock, controlled the finance and road committees and, through such control, entered into an "illegal, fraudulent and secret scheme" to obtain control of Harbor and its resources. While Harbor has not expanded its manufacturing facilities in the past five years, Long-Bell has increased its annual plywood capacity from 30 to 185 million sq. ft.

"Nuts" may join "Think" as a company motto!

Come May 1, General Anthony C. McAuliffe, who uttered the famous phrase when asked to surrender at Bastogne, will join American Cyanamid. He'll be vice-president of the company's newly created Engineering and Construction Division, as well as president of its Chemical Construction Corp. subsidiary.

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Wondering About the Wonders

The oft-heard complaint that prices of wide-spectrum antibiotics are too high got support from a new source this week. The Federal Trade Commission is beginning two separate investigations of the subject—and one of these will cost the agency \$100,000, taking 15 months to complete.

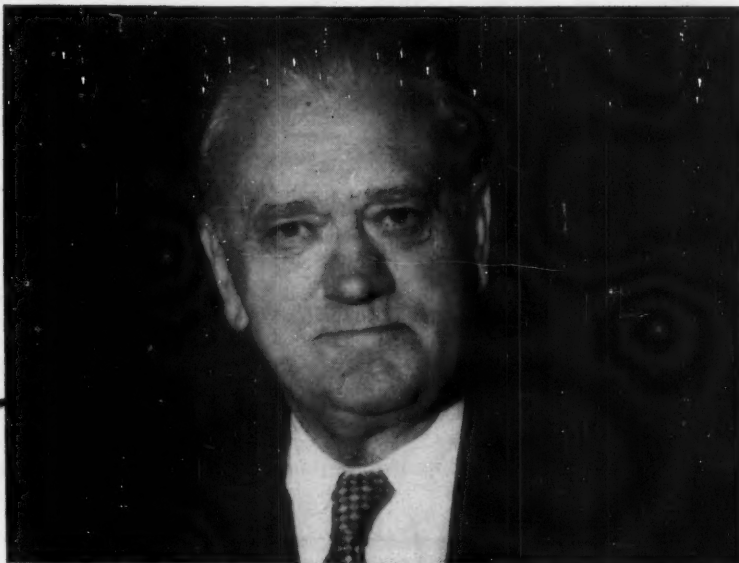
This survey, labeled an "impartial economic survey" of the antibiotic-producing industry, is an outgrowth of a pilot project started three years ago and just recently completed by the FTC Bureau of Economics.

The other—launched without the buildup and publicity fanfare—is beamed at an alleged conspiracy linking drug wholesalers with producers. Unlike the survey project, this is the type of inquiry that could lead to prosecutions.

Word about both investigations was given in secret to congressmen who for some weeks have been pondering how much money should be allocated to FTC for the coming fiscal year; it has just been made public.

Rep. Albert Thomas (D., Tex.), chairman of the group, has long contended that antibiotic prices are too high. But he was partly refuted by FTC's chief investigator, Harry Babcock. Babcock reported that "prices of these antibiotics have come down, contrary to public belief." When Thomas asserted that 45-60¢/pill is paid "at any drug store," Babcock admitted prices are still "pretty high, but from the point they started, they have come down."

Less of a Critic: This is decidedly less critical a tack than that taken by former FTC Chairman Edward Howrey. Nonetheless, FTC—now



FTC'S GWYNNE: A two-pronged probe on antibiotic pricing.

headed by former Iowa congressman John Gwynne—is still convinced that only a thorough study can shed light on whether current industry practices keep antibiotics from being readily available at reasonable prices.

The other investigation—on whether makers and wholesalers conspire to fix prices—could be a more serious threat. But so far, FTC has to admit that its case looks good only in theory. It hasn't been able to find evidence that antibiotics makers are conspiring among themselves or with distributors to fix prices.

More of a Problem: As yet, however, the real point that FTC may be able to exploit hasn't been too much pondered—the difference in price levels between those of the wide-spectrum antibiotics produced by a single producer, and that of tetracycline, made by several.

The same Congressional group that listened to FTC Chairman Gwynne and his associates heard, a fortnight before, from Veterans Administration purchasing officials, that "it is very

difficult" to get good prices on some proprietaries.

However, while VA usually pays about half the retail price for the drugs and pharmaceuticals it buys, it reported that it was able, by playing one producer against another, to buy tetracycline pills for about one-third the retail price.

The Same Refrain: To Washington industry observers, however, the promises of new studies, made as a government agency has its Congressional budget hearing, can be taken with a grain or two of salt. To get the money they want, agency heads often overemphasize subjects in which a congressman on an appropriations committee has a special interest.

This may have happened here. Both Thomas and another committee member, Rep. Joe Evins (D., Tenn.), have made it plain they feel antibiotic prices are too high.

But again, it shows the problem that is faced by the drug industry in justifying current price levels to important segments of the public.

Turning Point At Last

Diversification—a magic word to many companies—is not always an automatic way to improve total profits. Some industry people have felt that the postwar chemical diversification of National Distillers Products has certainly borne this out. They can scoff no longer.

For 1955, admittedly a good year for most chemical firms, was more than that for National Distillers. As President John Bierwirth somewhat wryly remarks, it was the year that plants at Tuscola, Ill., “achieved operating results at least equal to original forecasts.

“The past six years have been years of development and growth,” continued Bierwirth, “but 1955 represents the turning point.” Sale of assets that didn’t fit the company’s plans for expansion and diversification has been substantially completed. Improved profits may now be expected.

It’s at Tuscola that you can see the

changes. Just onstream and abuilding are several projects by both National Petro-Chemicals (60%-owned by National Distillers, 40% by Panhandle Eastern Pipe Line) and its U.S. Industrial Chemicals Division (see chart).

Sales Spurt: Saleswise, too, there’s quite a change. In 1949, chemical sales for the country’s third largest distiller were virtually zero. For 1956, spark plug chemical General Manager Robert Hulse and crew are shooting for \$100 million in chemical sales.

And as National Distillers, combined beverage and chemical sales slipped over the half-billion dollar mark just last year, the estimated 15% worth of chemical sales provided roughly 20% of operating profits.

Besides, earnings per share have jumped from \$1.13 in 1952 to \$1.60 in ’55, with expected \$2 earnings by the end of 1956. And that should please any stockholder on record.

Admittedly, most of the gains are



DISTILLERS' BIERWIRTH: Cordial, he fosters chemical growth.

National Distillers' crowded expansion timetable

These are firm

Jan. '55:

USI's anhydrous ammonia plant went onstream at Tuscola, Ill. Capacity: 60,000 tons/year.

March '55:

National Petro-Chemicals' polyethylene plant went onstream at Tuscola. Capacity: 26 million lbs./year.

Aug. '55:

National Pet's ethylene capacity expanded at Tuscola from 300 to 350 tons/day.

Nov. '55:

USI added two ethyl alcohol denaturing plants—one at Newark, N. J., the other at Tuscola. Total capacity: 22 million gal./year.

Jan. '56:

National Pet's anhydrous alcohol plant went onstream at Tuscola. No capacity announced but said to be the largest of its type ever built.

These are upcoming

Next month:

Expanded sodium producing capacity at Ashtabula, O.

Late '56:

USI's wet-process phosphoric acid plant at Tuscola will be onstream. Capacity: 60,000 tons/year.

Next year:

USI's sebacic acid isomer unit will go onstream at Tuscola. Capacity: 10 million lbs./year.
Polyethylene production will be expanded at Tuscola.

attributable to the firm's newly won chemical position. But how has National, its USI division, and National Pet subsidiary managed to swing such record gains in so short a time?

In answer to that question, USI's Assistant Chemical Manager William Marsh says, “At first, you might say, we bought our way into the chemical business. Now, however, we’re building steadily on the purchased blocks.” National, nevertheless, may still have some new acquisitions up its corporate sleeve; but simultaneously, much attention will be given to fully exploiting existing plants, both by giving them full expansion treatment and by further product development work.

Sodium Start: Marsh recalls that it was Du Pont in '48 that offered National Distillers a license to produce metallic sodium (and by-product chlorine), for which it needed additional capacity but was unwilling to build itself. That launched both National's chemical career and its Ashtabula sodium plant, which next month will expand to over 60-million-

lbs./year capacity. The increase, among other things, will supply Union Carbide's sodium requirements for making titanium.

What's more, National's chemical appetite seems to have more taste for titanium than simply supplying sodium. Using its own titanium production process, the firm is now producing pilot-plant quantities of the metal, and, in addition, is delving into alloys and fabricating methods.

Will National actually get into titanium production? Company management ducks, reporting only that "the titanium picture is far from clear at the moment. We're watching it with more than casual interest."

Aside from Ashtabula and titanium, the highly automated Tuscola chemical complex should now be pulling its full load in contributing to profitable return on investment.

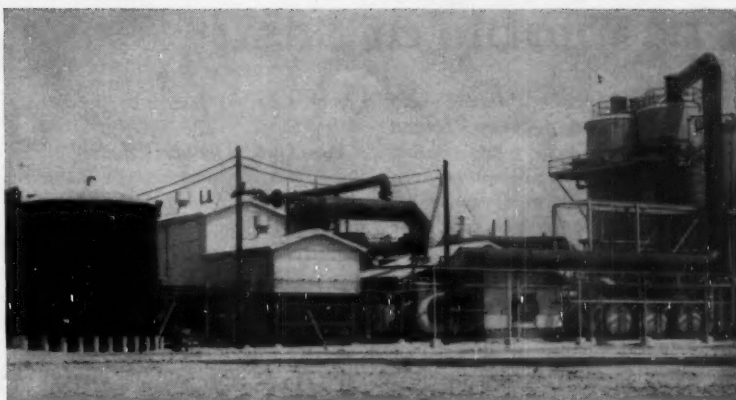
For the first time, the anhydrous ammonia unit there should be producing at capacity. Though onstream in early '55, mechanical snarls and a serious explosion have prevented continuous full-scale operations.

Aside from expansion and growth, National is undergoing personnel relations changes, too. Just over a week ago, employees were offered a stock purchase plan.

For every \$1 workers authorize the company to deduct (up to 5% of base earnings), NDPC will kick in 25¢ toward purchase of National stock.



USI'S HULSE: Energetic, he looks for \$100-million chemical sales in '56.



TEXAS CITY'S PLANT: Will the doors reopen?

F. W. SCHMIDT

Distress Flag Up

These days, though record earnings and profits are the rule, there are still some exceptions. One: Texas City Chemicals, which closed its plant doors a few weeks ago, and has since been on the market for a buyer (CW Business Newsletter, Feb. 25).

And though TCC's top management won't talk about what happened to their once-bright future in dicalcium phosphate production, here's how the matter seems to have shaped up:

The now - shut - down \$6 - million plant, probably the first dicalcium phosphate facility of its kind to use weak acid extraction, got rolling in Oct. '53. Principal products consisted of fertilizer-grade and feed-grade dicalcium phosphate.

Process Plus: Process-wise, TCC seemed to get off the ground easily. The plant, designed for a capacity of 56,000 tons of feed-grade DCP, ran for a sustained period at this rate. In the 12 months prior to close-down, however, only 32,000 tons had come off the production line.

One possible reason for such under-par tonnages: frequent plant shut-downs caused by lack of stand-by equipment.

Market-wise, TCC could have had headaches, too. When the plant was in the blueprint stage, granular feed stock was not in demand by users. By the time the plant was on line, though, the market picture had changed—"granular" was the desired material.

Whether or not TCC management made consistent and sustained efforts

to solve the problem of granulation is a moot issue. It's reported, at any rate, that TCC's product was selling \$2-3 below the going market price. And by last Jan. 10, TCC had terminated its sales agreement with Bradley and Baker, its feed-grade distributor.

All for the Acid: One of the key factors in selecting the Texas City plant site was supply of low-cost sulfuric acid. Carbide and Carbon Chemicals at Texas City had suitable spent acid, and needed concentrated acid itself.

By agreement, the companies signed a 15-year contract whereby TCC will supply Carbide with 98% plus acid in return for 55% strength. And since TCC had a 120,000-tons/year strong acid plant, such an arrangement was important to TCC's economic operation.

Now with the dicalcium phosphate unit idle, Carbide is taking a wait-and-see attitude, meanwhile buying its sulfuric from Consolidated Chemical Industries.

Nothing ever seems to have come of diversification plans that Texas City Chemicals reportedly had. One proposal was to branch into 16-20-degree fertilizer and diammonium phosphate. Another was to produce sodium fluoride and synthetic cryolite from by-product sodium silicofluoride.

But right now, Texas City Chemicals' plant doors are shut. The question is:

Will some other interested chemical management find it profitable to open them again?

Acceptable at Last?

Chances of getting broader—and permanent—water pollution control legislation into this year's statute books will turn on the reception given next week to a new compromise bill hammered out over the past few months.

The measure, the fruit of behind-the-scenes talks by compromise-minded groups, has just been tossed into the Congressional hopper in advance of public hearings that start Monday.

It carries the name of Rep. John A. Blatnik (D., Minn.), who heads the House Public Works, Rivers and Harbors subcommittee. But, it's really the product of state and federal pollution control officials, who labored during Congress' summer recess to overcome the strong opposition that gathered around key features of the

clean-water bill passed by the Senate last year.

How Good a Balance? Blatnik thinks the new approach answers the most serious objections, will go a long way to satisfying chemical, pulp and other industries and state officials who fear heavy-handed federal intrusion into pollution abatement problem. It balances concessions to these groups with enough federal enforcement teeth, backers claim, to hold the support of wildlife protectionists.

Chemical industry position is being formulated in meetings of Manufacturing Chemists' Assn.'s Water Pollution Abatement Committee, headed by Harold Jacobs of Du Pont. Advance indications are that the 18-member MCA group will decide against making an all-out fight against the bill,

but will withhold endorsement.

The new bill holds to the general lines of the Senate-approved S. 890. Clearer, stronger procedural safeguards against premature federal suits filed against interstate stream polluters are established, as is a spelling-out of program standards to qualify states for federal research grants.

Blatnik's bill (H. R. 9540) specifically recognizes the primary state responsibility for curbing pollution of interstate streams. The U.S. Public Health Service, under the new enforcement section of the bill, must hold to a rigid formula of notices and full hearings to states and industrial plants before utilizing new federal powers to compel pollution abatement.

These tightened procedural reins are designed to assure state authorities and industry polluters every opportunity to take abatement measures before the Public Health Service could utilize its new powers to compel action.

Retained unchanged from the Senate bill is the new authority permitting federal lawsuits either after obtaining consent of the state in which pollution is discharged or at request of downstream state. This is one of last year's major concessions to industry and state pollution authorities; the original version of S. 890 allowed federal enforcement without prior state consent. But it is still considered unacceptable to some groups.

Blatnik's bill, by writing firm legislative standards, takes away some of the discretion that previous bills gave to USPHS in disbursing \$2 million/year in research grants to state control groups. Next week's hearings may show some big states still wary on this point, but Blatnik claims 37 states have endorsed his new provision.



Vaccine Visit

CONGRESSMEN, now that the federal government pays for Salk vaccine inoculations, are important chemical industry customers. So Eli Lilly hired a railroad car to bring members of the House Commerce Committee, which passes on vac-

cine purchases, out to Indianapolis for a look at how the vaccine is made. H. A. Detwiler here shows Reps. Joseph O'Hara (R., Minn.), Percy Priest (D., Tenn.) and Oren Harris (D., Ark.) (left to right) the way to grow poliomyelitis virus.

EXPANSION

Methanol: Commercial Solvents will boost "substantially" its methanol and petrochemical derivative facilities at Sterlington, La., at a cost of \$10 million. Target date for completion: 12-18 months.

Asbestos-Cement Products: Two new plants are in the news: Johns-Manville will build, by mid-1957, a 225,000-sq.-ft. plant to make asbestos-cement products. Location: near Stockton, Calif.

• Eternit, S.P.A. of Genoa, Italy,

Washington Angles »»

»» Increasing complexity of new drug and cosmetic formulations explains the growing backlog of cases for the Federal Trade Commission's investigators of deceptive practices. There were 57 cases held up at the start of the 1956 fiscal year, waiting for reports on legitimacy of advertising claims from FTC's Division of Scientific and Medical Opinions, and the backlog is expected to increase during the year.

But FTC isn't asking more money for this work.

»» Cosmetic chemical control legislation has been snagged by the current disagreement over food additive bills. Unless and until Food & Drug administration and industry officials can compro-

mise their dispute over these approval procedures, the House Commerce Committee won't go on to a further control bill.

Congressmen see little point in re-airing unsettled differences.

»» There's good chemical representation among 59 companies granted permits last week to allow them access to restricted atomic data. Included: American Cyanamid, Borden's Chemical Division, and Kaiser Aluminum and Chemical.

»» If you sell specialty elastomers, you'll want to read a new government report that tells where present commercial and experimental rubbers fail when used in contact with hydraulic fluids at the temperature ranges encountered by missiles, super-and hypersonic aircraft. It's PB 111766. You can get it from the Office of Technical Services.

will begin construction this year near Vancouver, B.C., on what is claimed to be Canada's first asbestos-cement products plant. Cost: \$2 million.

• **Newsprint:** Hudson Pulp and Paper will add 75,000 tons/year of newsprint capacity at Palatka, Fla. Cost: \$25 million.

• **Cement:** An increase in portland cement capacity from 1.9 million bbls./year to 2.7 million bbls. is planned by Diamond Alkali for Painesville, O. Completion date: early 1957.

• **Epoxy Resins:** Shell Chemical, at its Houston plant, is building a new epoxy resin unit to produce special resins and curing agents in small commercial quantities.

COMPANIES.

• **Calveras Cement** (San Francisco) has floated a \$5-million loan from the Bank of America and Mutual Life Insurance Co. to finance future plant expansions.

• **Foiltone Products** (Cambridge, Mass.) has been incorporated as a wholly owned subsidiary of National Research Corp., to commercialize NRC's process for continuous metal coating in vacuum.

• **Alco Oil and Chemical** (Philadelphia), latex chemical compound manufacturer, has been purchased for an

undisclosed sum by a group of Cleveland investors and management specialists. The new owners have reincorporated the firm in Delaware.

• **Zonite Products** has changed its name to Chemway Corp.

• **Visking Corp.** directors have approved sale of the firm's Fabrics Division to Chicopee Manufacturing Corp. (New Brunswick, N. J.), a Johnson & Johnson subsidiary.

• **Haveg Industries** (Wilmington, Del.) has acquired Pla-Tank Corp. (West Warren, Mass.).

FOREIGN.

• **Nylon/Australia:** Now under construction near Melbourne is a new \$11.2-million nylon plant. Scheduled to turn out 5 million lbs./year by 1959, the plant will be the chief nylon-producing unit of British Nylon Spinners (Australia), and is expected to meet most of the country's nylon requirements.

• **Heavy Water/India:** The Indian government will build a large heavy water plant in the Bhakra-Nangal area of North India. Vitro Corp. has been retained to engineer the project. Electric power will be available from the Bhakra-Nangal dam.

• **Phenol/Germany:** Phenol Chemie of Gladbeck, first West German firm

to use the cumene route to make phenol and acetone, will hike phenol production from 8,000 to 15,000 tons/year. Reason: growing domestic needs.

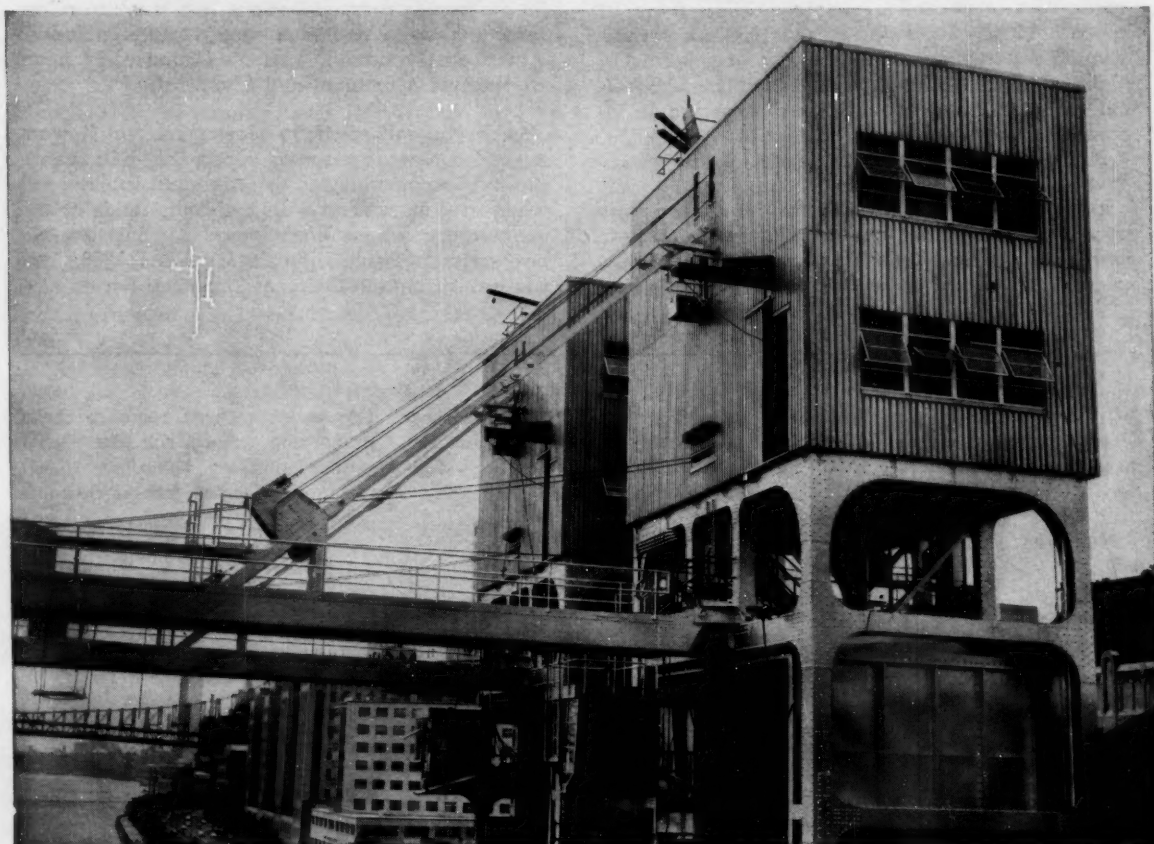
• **Fertilizer/Egypt:** Negotiations between Ahmed Abboud Enterprises and the U.S. Import-Export Bank have just resulted in a \$6-million loan to the Egyptian firm for expansion of facilities at its Suez plant. It will up fertilizer production from 220,000 to 320,000 tons annually.

• **Peroxide/India:** The newly formed Indo-British National Peroxide Ltd. has just begun production at a new plant in Bombay. The plant can turn out 750 tons of hydrogen peroxide annually—more than 200 tons over India's current requirements. British Laporte Chemicals designed and set up the plant and is represented on the new company's board of directors, though Indian industrialists have a controlling interest.

• **Fertilizer/Mexico:** A government-sponsored company, Guanos y Fertilizantes, plans to build a \$16-million fertilizer unit in Coatzacoalcas on the Isthmus of Tehuantepec. Minimum daily output expected: 120 tons of ammonia, 250 tons of ammonium nitrate, 140 tons of triple superphosphate. Provided satisfactory credit arrangements can be made, the construction contract will be awarded to a U.S. company.

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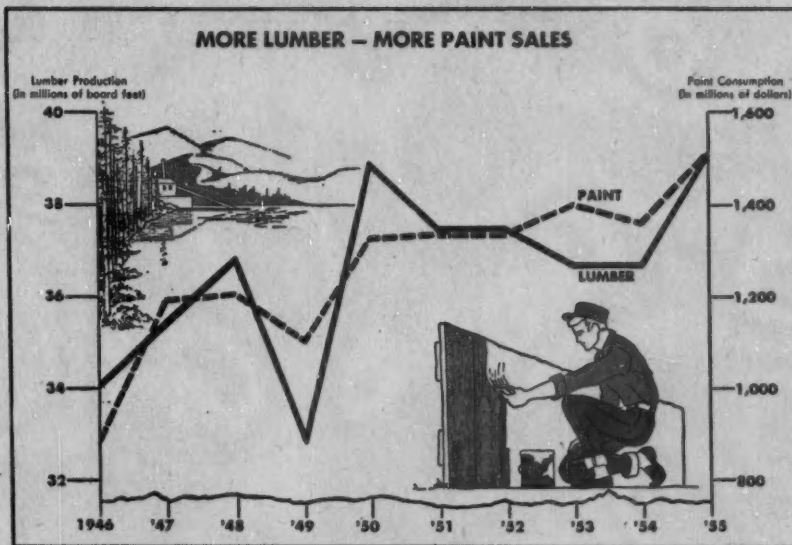


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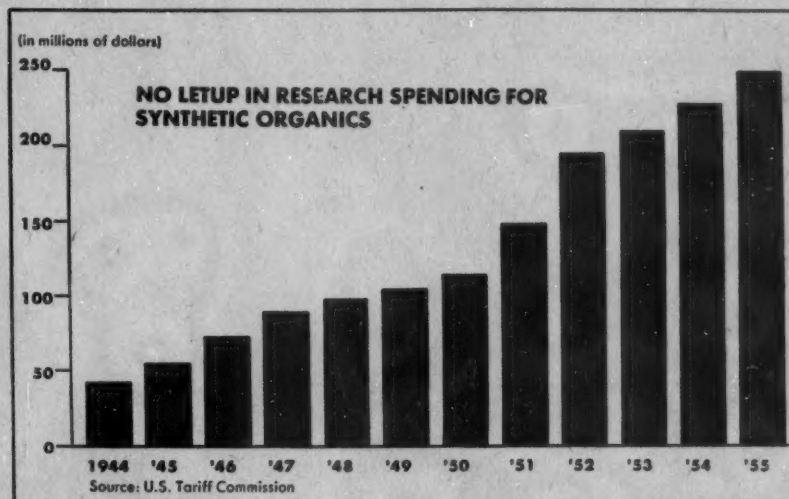
Charting Business

CHEMICAL WEEK
March 10, 1956



LUMBER output has proved to be a useful indicator for manufacturers of paint and other chemicals used in construction. Closely tied to the economic state of the nation, growing demand for new dwellings, office buildings, furniture and industrial plants has brought a considerable increase in lumber production.

And paint sales have followed a nearly parallel path. Exceptions came in 1951 (during the big industrial buildup following the start of the war in Korea) and in 1953 (end of the Korean fighting), when lumber output—the more erratic of the two indices—dropped as paint production kept rising.



ORGANIC chemical makers are finding more and more that to increase profits they have to increase spending for research. So it's not surprising that the total of money poured into development of new products and improvement of

existing products in this field has grown by an estimated 470% over the past decade. Last year, from all fields of chemical research, 426 new chemicals and chemical products were introduced, bringing the total available to over 8,000.

Charting Business

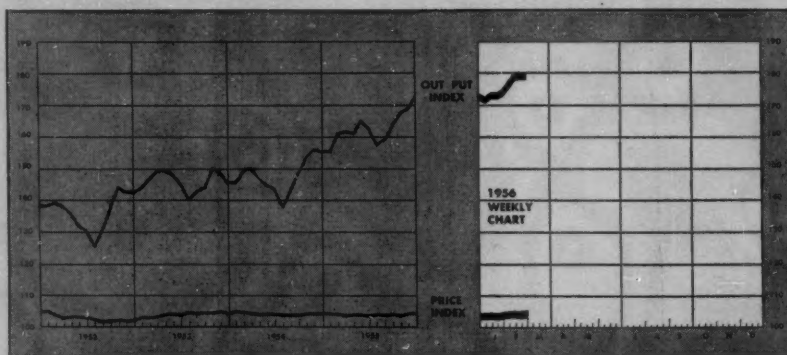
(Continued)



American chemical makers are doing their share in the government's efforts to keep other countries outside the Communist orbit. First through the Marshall Plan, then the Foreign Operations Administration and now the International Cooperation Adminis-

tration, large shipments of chemicals—mostly fertilizers and medicinals—have gone abroad. Under the Marshall Plan, Free Europe was the sole recipient; but after a transition period in 1952-53, the government shifted its aid program to give more help to Asian countries.

BUSINESS INDICATORS



WEEKLY

	Latest Week	Preceding Week	Year Ago
Chemical Week Output Index (1947-49=100)	182.0	180.5	161.0
Chemical Week Wholesale Price Index (1947=100)	105.6	105.3	104.1
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)	478.2	471.3	372.9

MONTHLY Employment (thousands)

	Latest Month	Preceding Month	Year Ago
All Manufacturing	13,240	13,460	12,523
Nondurable Goods	5,477	5,607	5,341
Chemicals and Allied Products	556.1	558.4	534.4



M.E.K.? That's industry's pet name for *methyl ethyl ketone*. It used to be a mere trickle from wood distillation. Now MEK flows in abundance from petroleum. Industry goes for it . . . head over heels.

For instance, as a solvent, MEK is the industry favorite in making fine lacquers. In refining lube oils, MEK is the chemical "magnet" that takes out unwanted wax. Insecticides, rubber-

based adhesives, plastic cocoons for mothballing equipment, printing inks and engine cleaners are some of the products that benefit from MEK.

Providing the major supply of methyl ethyl ketone is one way in which Shell Chemical serves industry. Shell Chemical's products or services can surely improve your manufacturing techniques, reduce costs, or in fact give you a variety of benefits.

Shell Chemical Corporation

Chemical Partner of Industry and Agriculture

NEW YORK





l o o k . . .

i t ' s

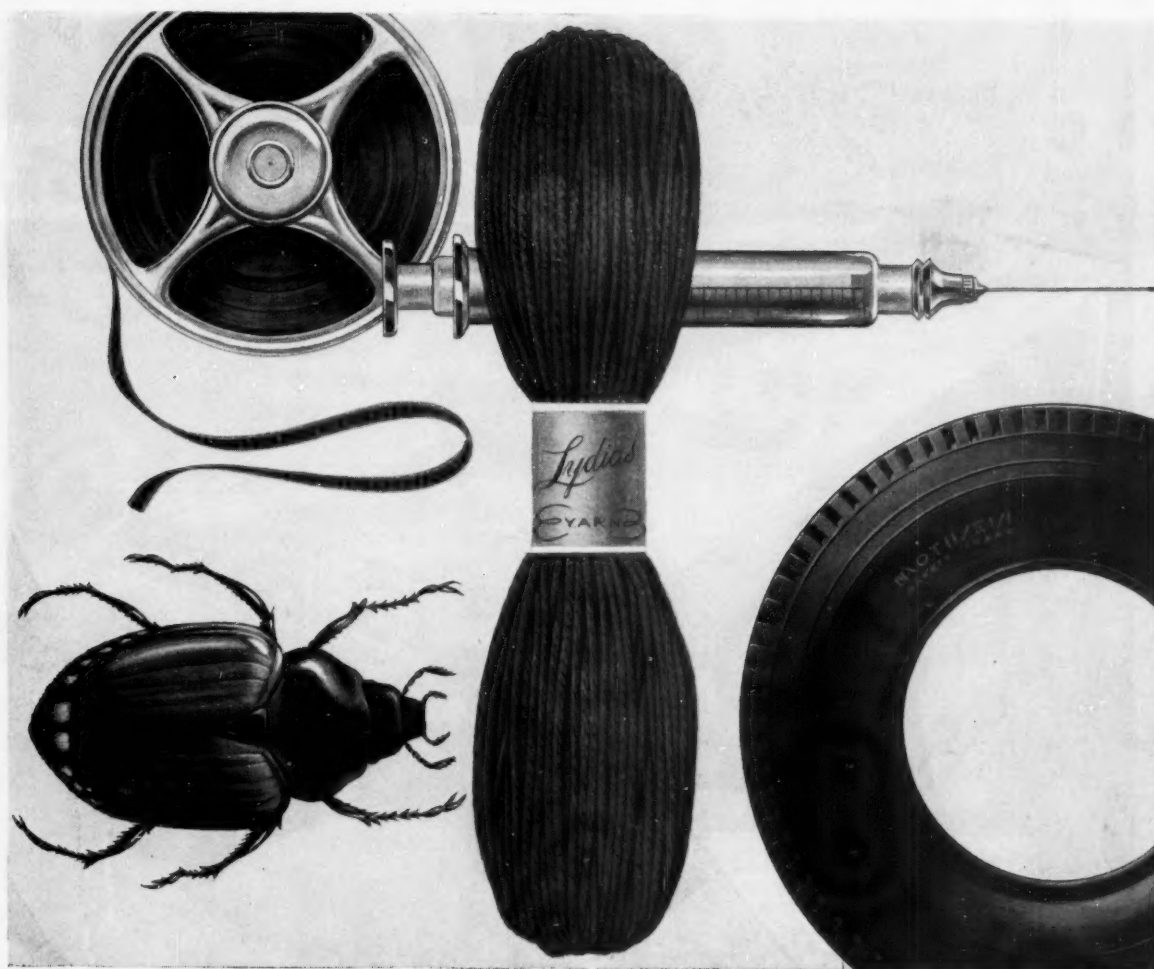
T I T A N O X [®]

The white coating on these venetian blinds contains TITANOX, the No. 1 titanium dioxide white pigment. If you make white or pastel finishes for venetian blinds, automobiles, or any other hard-to-cover metallic goods, you will find TITANOX the ideal white pigment to use.

In paints—as in plastics . . . paper . . . rubber . . . ceramics —TITANOX assures you of the whitest whites, the highest hiding power, and strict uniformity. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Atlanta 5; Boston 6; Chicago 3; Cleveland 15; Houston 2; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 14, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

Titanium Pigment Corporation is a subsidiary of National Lead Company

3786



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Rohm & Haas methylamines are ideal low-cost sources of basic organic nitrogen. They can be used as intermediates for many products, including rubber-vulcanization accelerators, pesticides, quaternary disinfectants, pharmaceuticals, photographic developers, dyestuffs, and wetting agents.

All three amines (monomethylamine, dimethylamine, and trimethylamine) are supplied in both aqueous and anhydrous form in drums, cylinders, or tankcars. Large volume production in two separate plants provides continuing availability. The high quality and purity of these amines reflect more than 20 years' experience in their production.

Write to Department SP for authoritative information to assist you in research, process development, and plant design.

March 10, 1956 • Chemical Week



Chemicals for Industry

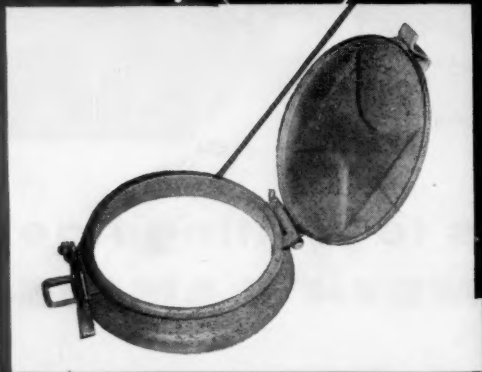
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Representatives in principal foreign countries

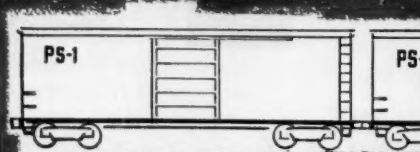
the PS-2

COVERED HOPPER



WEATHERTIGHT HATCH AND HATCH COVER

The hatch opening of the PS-2 is of one-piece pressed steel, welded to our roof sheet. With an internal diameter of 2'-6" the opening rises 4 1/2" above the roof surface. Note how the upper lip of the opening is curved down to help exclude weather and dirt. The hatch cover, also of one-piece pressed steel, flanges so that when open it fits on the roof between the opening flange and the roof edge. It does not block the running board. The hatch cover fits tightly onto the curved lip of the opening, and makes a tight seal on the entire opening circumference. Hatch cover locking device is positive, simple and easy to operate.



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BEST ON THE

GREAT AMERICAN RAILWAY System

BY PULLMAN-STANDARD

keeps bulk shipments CLEAN and DRY

**faster loading and unloading, too,
mean important time and money savings
for shippers and consignees**

Built by Pullman-Standard, leader in the carbuilding field, the PS-2 Covered Hopper Car is standardized for maximum service to shipper, consignee and railroad.

For any dry lading capable of being shipped in bulk the PS-2 offers assurance that dirt and weather will be excluded. Patented Pullman-Standard circular hatches are designed so that driven rain cannot build up against the coaming and seep up and under the hatch cover. The lip of the coaming is rolled downward as an added weather safeguard. The hatch cover makes firm and smooth sealing contact with the entire circumference of the coaming rim. Special, easy-to-operate latch assemblies hold the covers tightly closed. The properly located circular hatches permit rapid loading and unloading with hose or wand, while the Pullman-Standard design of hoppers, hopper chutes and hopper doors allows fast unloading directly into take-away devices. Hopper doors operate easily, but close securely and positively, permitting no loss through leakage.

The PS-2 Covered Hopper Car is built with worker safety in mind. Hatch cover latch assemblies are located well away from the roof edge. Hatch covers hinge so that opening and closing are parallel to the length of the car: the cover of the open hatch lies on the roof, out of the working area. Workmen perform most operations

from the security of the nonslip running board and it is unnecessary for men to walk on or over opened hatch covers or approach the edge of the roof.

The PS-2 is now in service in two sizes: two hopper, 2003 cu. ft. with 8 loading hatches and 4 unloading doors, and three hopper, 2893 cu. ft. with 10 loading hatches and 6 unloading doors. In either size, every PS-2 is built with the precision craftsmanship that has helped Pullman-Standard become the leader in the carbuilding field. And every PS-2 is thoroughly water tested to make certain that it is completely leak proof.

Standardized freight cars, the PS-1 Box Car, PS-2 Covered Hopper, PS-3 Open Hopper and PS-4 all-purpose Flat Car, are built only by Pullman-Standard. And standardized freight cars are designed, tested and mass produced with the precisely engineered craftsmanship that has made them outstanding in economy, dependability and performance. Shipper, consignee and railroad all benefit through specifying Pullman-Standard Standardized Freight Cars.

More than 9500 PS-2 Covered Hopper Cars have been put into service or ordered by 46 service and shipper-conscious railroads. To learn how the PS-2 could handle your bulk shipments as it does hundreds of materials, write Pullman-Standard.

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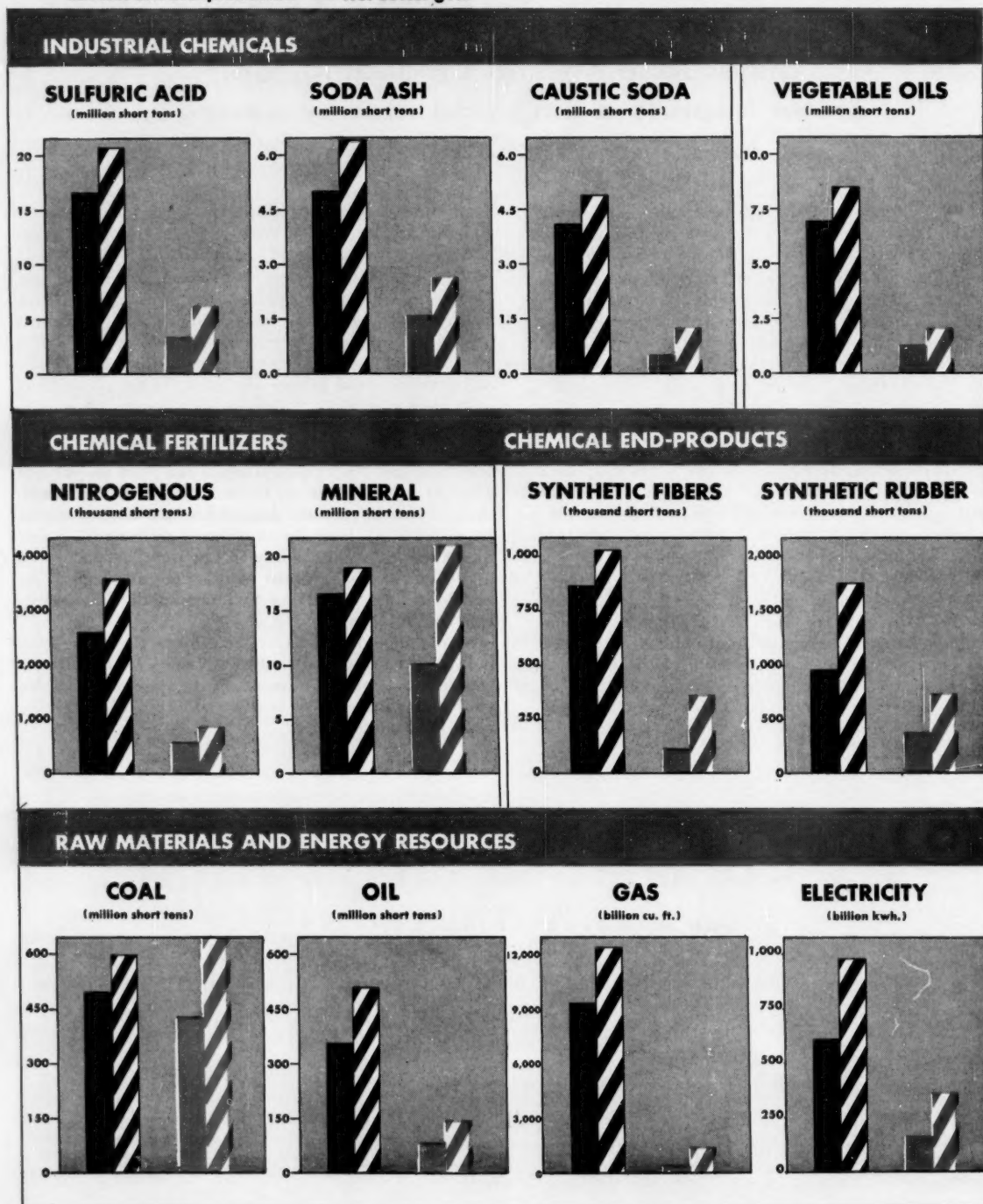


New Party Line Set for 'World's Largest Chemical Firm':

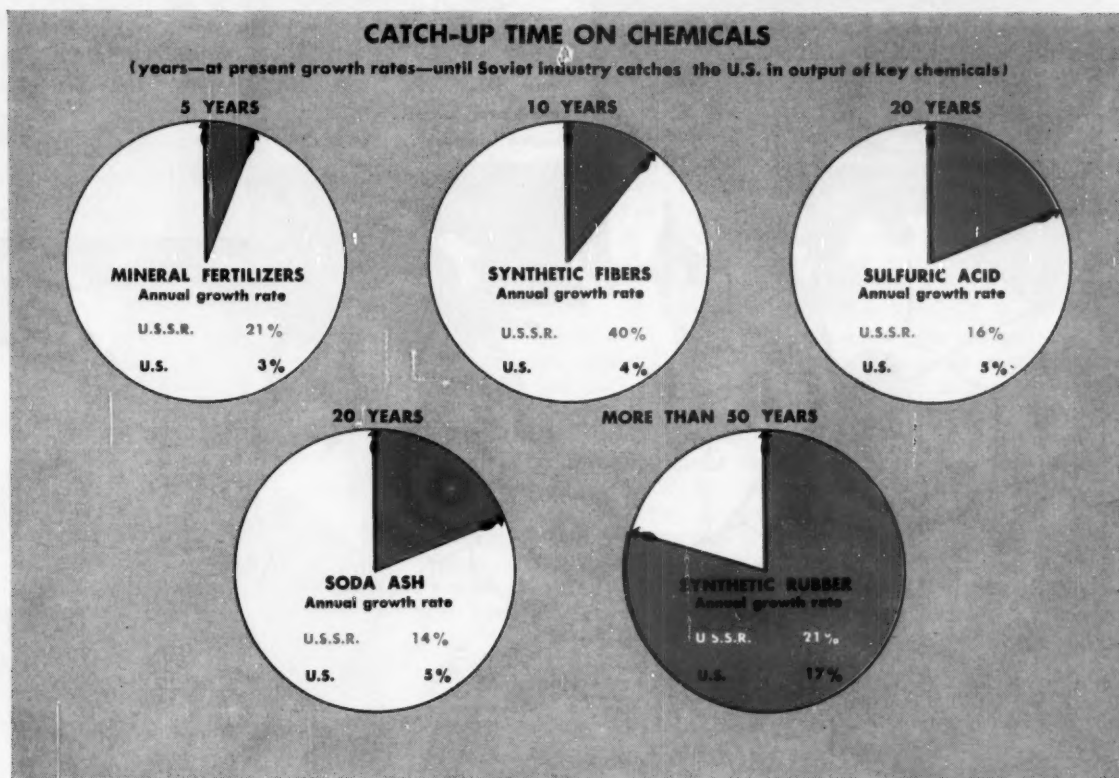
PLANNED ECONOMY VS. FREE ENTERPRISE

(Increasing chemical output under new Soviet Five-Year Plan
and under uncontrolled economy in U.S.)

■ 1955 U.S. production ■ 1955 Soviet production
▨ 1960 est. U.S. production ▨ 1960 Soviet goal



Swift Expansion, Modernization to Surpass U.S. Output



Big New Rival: Reds' Chemical Trust

Another Five-Year Plan—with lofty goals for increased output of chemical products—is going up on town and factory bulletin boards all across Soviet Russia.

With 15% of the U.S.S.R. budget allotted to operation and expansion of that country's chemical cartel, producers in the U.S. and other Western nations can no longer ignore this potential competitor.

Here's CW's account of where the Soviet chemical industry stands today, where it's heading, and what it all means to chemical management in the U.S.

Now being pushed and prodded to outdo the U.S. chemical industry in every way and as promptly as possible, the state-owned, Communist-party-directed complex of chemical plants in the Soviet Union is emerging from total obscurity into what might well be called the world's largest chemical company.

Though it still lags behind Western private enterprise in technology and productivity, this Soviet chemical trust

has big ideas for the future. If it fulfills the goals set out in the newest Five-Year Plan, Russia's chemical industry will overtake the U.S. within a few years in some lines of chemical production (see charts), and will be able to elbow Western producers out of some export markets.

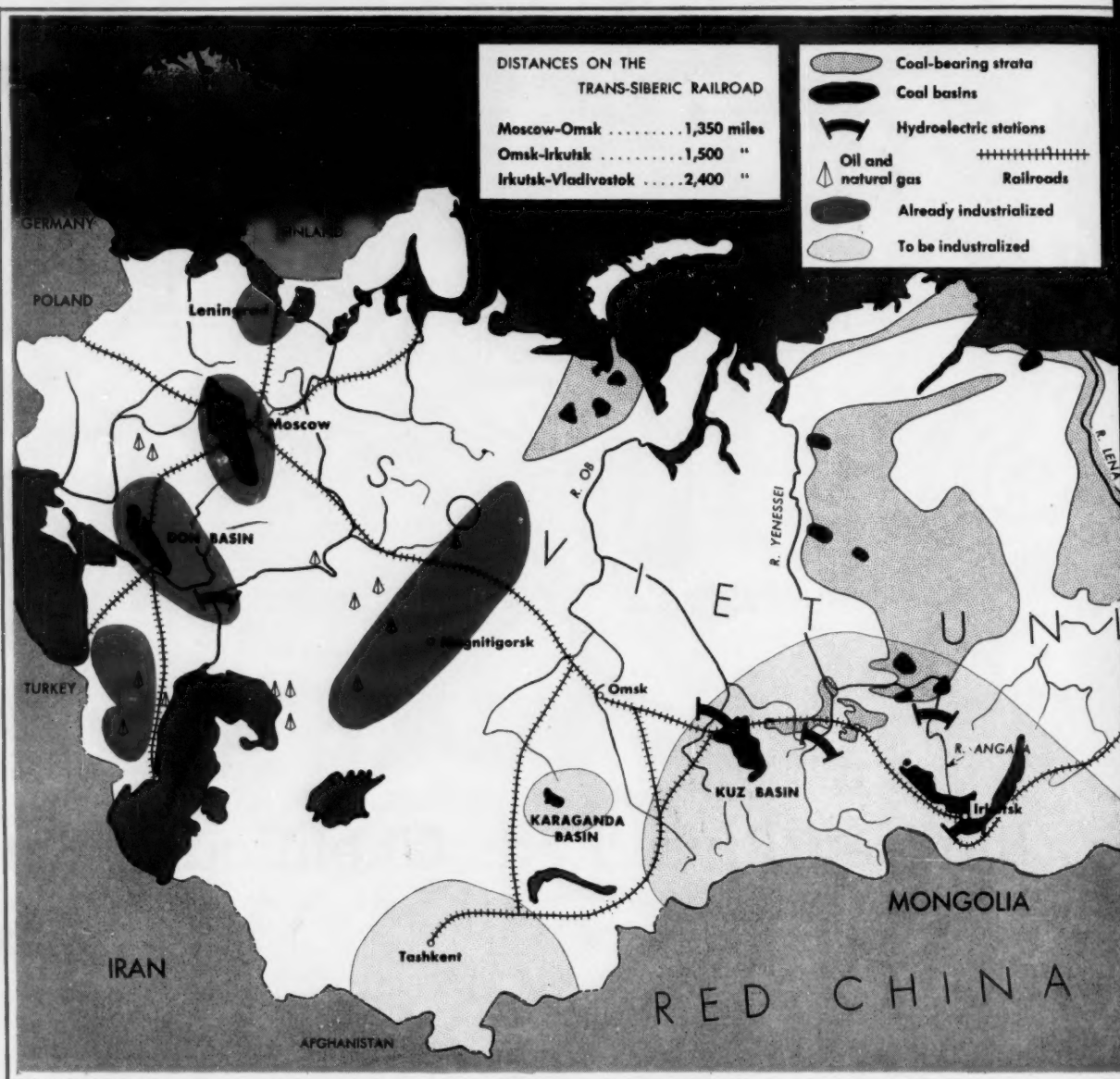
Another possible consequence for U.S. chemical companies: if the Soviet chemical industry does all that it's supposed to do to bolster the country's

economic and military power, the U.S.—to continue its policy of negotiating from a position of strength—might find it necessary to take up some kind of government-backed program designed to put more bone and muscle into our own chemical industry.

In particular, some federal encouragement might be meted out to those parts of the industry that would directly support any future mobilization effort.

No More Snickers: What the Bolshevik leaders Nikita Khrushchev and Nikolai Bulganin sought to make clear to the whole world at last fortnight's Communist Party Congress in Moscow is that the time for scoffing at Russia's industrial efforts has passed, and that their policy of emphasizing heavy industry is going to be pursued on a long-term basis.

The Soviet Union, the new Five-Year Plan declares, "now has all necessary



conditions to equal and exceed the most developed capitalist countries in volume of production per capita." That Russia's chemical industry is expected to take a prominent part in this growth movement is made plain by figures from the country's new annual budget, showing that 15% of the central government's expenditures this year will be for operation and expansion of the chemical industry.

Thus Commissars Saburov and Tikhomirov (*inset in map*)—in charge of all industry and chemical industry, respectively—are getting a sweep-

ing directive to build new plants, modernize old plants, and in every possible way put Russia's chemical industry on a competitive basis with Western producers. In this task, they'll have some advantages: in the Soviet Union, chemical management enjoys a monopoly, with no domestic rivals and no competing imports. Management doesn't have to show a profit; management can set all wage and salary rates; scientific and engineering personnel are provided by government-run schools; strikes and absenteeism are forbidden.

Building New Markets: Another thing about having a dictatorial government on your side: in some cases, the Kremlin is going to move thousands of people into new communities so that there'll be a supply of workers and consumers close to new chemical plants.

This is because the sprawling Soviet empire's vast supplies of raw materials are widely scattered, mostly in places remote from present population centers. The Communist party's high command intends to offset this drawback by establishing big new in-



dustrial centers close to the raw material sources of central Asia and eastern Siberia (see map). Materials and capital are to be expended lavishly; people will be brought in—by persuasion if possible, by conscription if necessary—from the populous communities in European Russia.

Upshot is that the Soviet Union's burgeoning industry will be concentrated in a number of separate but closely coordinated economic units, if this plan goes through, resulting in big transportation savings. And some of these new industrial centers will

be close to big countries in Asia—India, Pakistan, China and Burma—that are using increasing quantities of fertilizers and industrial chemicals.

Still Much Secrecy: Although the new Five-Year Plan discloses a number of chemical production figures, there's still much secrecy about what the Russian chemical industry is doing. For example, the Five-Year Plan states only that there'll be a "substantial" increase in sulfuric acid production*, and calls for an 87% rise in ammonia production without indicating what past output has been.

In production methods, the Soviets appear to be just starting to use processes that have been commonplace in the U.S. for some years. Last summer, Prime Minister Bulganin ordered the Ministry for Chemistry to step up chemical utilization of natural gas and petroleum for synthetic rubber, detergents, plastics and lacquers. The Russians, it's believed, have no unique urea synthesis; they've been testing

*Observers estimate that U.S.S.R. sulfuric production last year was about 4 million short tons (100% basis), or slightly more than that of western Germany and the United Kingdom combined, and that the Soviet goal for 1960 is about 6 million tons.

foreign methods and may adopt a modified Montecatini process. Pyrite reserves in the Ural Mountains will probably last for decades, but the Russians are also getting increasing quantities of sulfur from smelting gases.

Soviet coal output is scheduled to equal that of the U.S. by 1960, and oil and gas production—though now far behind—may be gaining. The U. S. S. R. is building hydroelectric dams, railroads and pipelines to serve the new industrial centers, and is believed to have practically unlimited sources of uranium and thorium that could provide nuclear power where other energy sources are uneconomic.

Under Stalin, Russia's chemical industry never came close to catching up with Western producers; but things may be different under the new regime. Certainly there's a sobering possibility that the Reds' chemical cartel may eventually upset present patterns of world trade, threaten to help swing the balance of industrial and military power to the Communist bloc. The heat's on U.S. chemical companies to meet this new challenge.

MEMO FROM MOSCOW: 'GET HEP'

(Communist party's principal criticisms of Russia's chemical industry)

- Level of chemical output lags behind growing demands of the country.
- Existing raw material sources are badly utilized.
- New technological processes that could increase productivity of the chemical industry are introduced sluggishly.
- Administration of chemical plants is enmeshed in red tape.

THE KREMLIN'S CHEMICAL REQUESTS

What's wanted of Russia's research and development men during the sixth Five-Year Plan

- Production of higher-analysis fertilizers to support Khrushchev's more ambitious farm program.
- Development of materials with better electrical insulating properties and heat resistance.
- Improvement of textile quality through better use of dyes and resins.
- Improvement of automobile tires through better use of synthetic fibers.
- Ways to improve and expand utilization of petroleum and natural gases for conversion into chemicals.



CATASTROPHE: Sudden loss of high-cost investment raises problems of . . .

How to Pay for Disaster

A wave of do-it-yourself sentiment—on the problem of insuring against plant disaster—is sweeping through the U.S. chemical industry.

Many chemical companies already are using self-insurance for this risk, according to a *CW* survey of 25 large, medium and small firms this week; and more concerns are planning to make a switch in this direction. Although some are turning to total self-insurance, most companies favor a deductible form, in which the insurance company bears the risk for all damages in excess of a certain sum.

Promoting the climate for increasing self-assumption of loss is the growing decentralization of the industry, allowing risks to be spread over wider geographic areas in smaller bundles. A half-dozen smaller firms, heretofore wary of taking their own risks, are planning deductible insurance as they take over additional plants. Costwise, partial or total self-insurance is cheaper than complete commercial coverage. Indeed, one chemical maker who studied the problem determined that 46% of its premium dollar went for insurance commissions, underwriting expenses and other costs, with the balance, 54%, taking care of losses and loss adjustments.

On this basis the company self-insured for the first \$25,000 damage on any one loss, paid in one decade \$75,000 for commercial coverage be-

yond that. Total self-insured losses over 10 years came to \$75,000, which, added to the premium cost, brought total insurance cost to \$150,000. The company figures it saved some \$90,000 over the 10-year period under this system.

To some, self-insurance means "no insurance," with or without consideration of calculated risk. Insurance managers caution that a sound program should recognize self-insurance, total or partial, as a system of reserves set up specifically for the purpose of covering losses.

Opinion varies on how such a reserve should operate. Usually, most managers point out, the larger the company, the easier it is to set aside the required funds. But estimated reserves as a percent of total investment vary widely, ranging from 15-30% all the way down to less than one tenth of one percent.

Generally, companies set up a "general insurance reserve" built from appropriations taken out of surplus. Some firms cover losses under the deductible system with outlays from current operating expenses. Still others use a combination whereby they invest a portion of reserves as a nest egg, meet certain losses from operating expenses, charge others to the reserve. Other methods:

- Set up a reserve equivalent to the average of past losses.

ADMINISTRATION . . .

- Set aside an amount equivalent to commercial coverage premiums.
- Put away savings on premiums each year.

All surveyed companies admit there are problems connected with self-insurance plans. "Certainly," says one insurance manager, "no company can afford to undertake even the deductible type until it is in sound enough financial condition to start setting aside reserves. Many a program has failed because this point was overlooked."

Insurance companies, according to the survey, are not keen on writing deductible policies, since it means less money for them. Moreover, chemical insurance managers claim that one of the toughest hurdles, curiously, in changing over to self-insurance has been to convince management that insurance companies are in business for profit, and that money a company can save in premium payments can be working for it in other ways.

Chiefly, the problem is one of balancing premium payments against loss expectancy, but this assumes operation over a long enough time to build up some experience and loss data. Some insurance men recommend starting out with very small deductible terms, as low as \$100, building up as the company can afford it. They point out that by subdividing risks, more likely loss possibilities can be given stronger coverage.

Legally, companies report few problems, except where state laws tend to prevent certain types of self-coverage, or where there may be contractual obligations contingent on contracts with property lessees. Taxwise, numerous firms have evolved methods whereby reserves are kept at a taxable minimum, usually through taking losses from operating expenses.

The growing popularity of self-insurance, according to the manager of a large fertilizer company, bodes sweeping changes in insurance schemes. Says he: "As companies turn more and more to this type of insurance, the whole business will become more highly competitive. The day may come when a company will be able to cover all types of insurance (employee, health, accident, marine, fire, etc.) under one policy with one lump sum deductible."

Meanwhile, many chemical firms are finding that self-insurance can help meet objectives at less cost.

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BROWNELL, TRAVIS: In clashes over loyalty, they stand out in . . .

Life or Death Struggle

Still lively despite attempts to have them certified as dead are three "left-wing" labor unions that have a number of collective bargaining contracts at chemical plants.

Not only are these unions living and breathing; they're busy this week planning more vigorous activities for the future. In particular, the International Union of Mine, Mill & Smelter Workers (Ind.) is working out arrangements with a powerful "right-wing" union — the International Brotherhood of Teamsters (AFL-CIO) — for a joint organizational drive that could affect some parts of the chemical process industries.

Mine-Mill and the two other left-wing unions, representing chemical employees — United Electrical Workers (Ind.) and International Longshoremen & Warehousemen's Union (Ind.) — are all in various kinds of hot water because of alleged Communistic activities on the part of certain union officers. For example, Attorney-General Herbert Brownell is asking the U.S. Subversive Activities Board to designate both Mine-Mill and U.E. as Communist-infiltrated unions, and may take similar action against ILWU. Also, all three unions — which were ousted from the CIO some six years ago as Communist dominated — are now supposed to be fair game for raids by AFL-CIO affiliates.

No Outward Gloom: But leaders of these unions are managing to conceal

any despair they may be feeling. Especially is this true of Mine-Mill's chief spokesman, Albert Pezzati, who has been serving as secretary-treasurer since Maurice Travis resigned that office under fire two years ago. Last month, Travis — who earlier had been convicted of perjury in connection with the non-Communist affidavit he had signed for compliance with the Taft-Hartley law — was sentenced by Federal District Judge Jean Breitenstein to eight years in prison and fined \$8,000.

Pezzati — who insists Travis' conviction will have no bearing on Mine-Mill's current contracts — is enthusiastic about the mutual assistance pact recently signed between his union and the Teamster's Western Conference.

This agreement, Pezzati says, will assist in organizing the unorganized in certain mining and chemical process plants in the West. And there's a good possibility, he figures, that this pact will be extended within the next six months to cover other parts of the country. This would mean joint action in collective bargaining, in defense against attacks by employers or raiding unions, and in pushing for wanted legislation.

Within the chemical industry, many of Mine-Mill's contracts are at fertilizer plants. In this field, Pezzati says, the plan is to "establish some sort of joint bargaining approach with other unions."

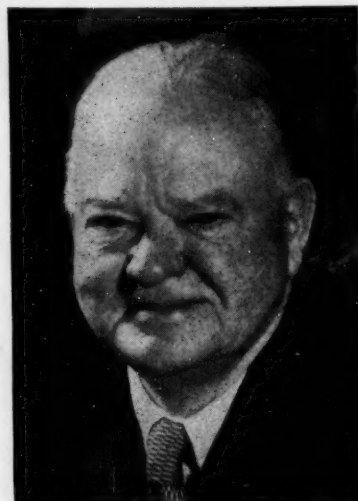
LABOR

Oil Pay Pattern: Along the Gulf Coast of Texas and Louisiana, where petroleum refining is the dominant industry, chemical companies have been making wage settlements closely paralleling the 6% increase formula that has become the current pattern in the oil industry.

A threatened strike by five AFL-CIO unions at Port Neches, Tex., was averted by Texas-U.S. Chemical's offer of a wage increase—reportedly 6% —and higher shift differentials. At Orange, Tex., Allied Chemical & Dye's Nitrogen Division has upped pay rates 5¢ to 14¢/hour for hourly paid workers, \$15/week or more for salaried employees. Goodrich-Gulf has boosted wages by 6% at its Port Arthur, Tex., plant, with comparable increases starting at \$26/month for salaried employees.

At Baton Rouge, La., Ethyl Corp.'s 6% offer is believed to be acceptable to District 50, United Mine Workers, inasmuch as it works out to only about 2½¢ shy of the 20¢/hour increase originally asked by the union. But because of continued disagreement over employee benefit plans and certain job classification changes, the union has gone on strike.

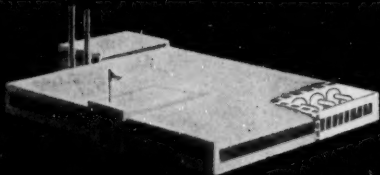
Special Labor Courts: Chemical management might expect to get faster adjudication of labor disputes if Congress accepts the new proposal by the



EX-PRESIDENT HOOVER: For labor disputes, special U.S. courts?

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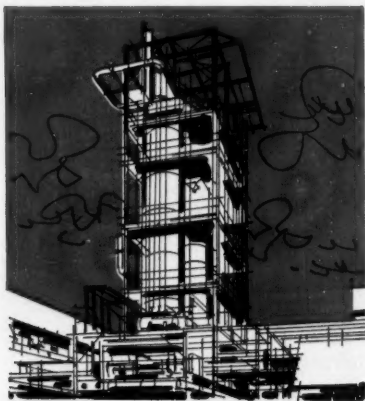
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SPECIALTY PALMITICS AND STEARIC ACID

Neo-Fat 16 Commercially Pure Palmitic
16-54 70% Palmitic
18 Commercially Pure Stearic
18-57 65% Stearic
18-58 70% Stearic
18-61 80% Stearic

OLEIC ACIDS

Neo-Fat 92-04 Low Titer White Oleic
94-04 Low Titer Red Oil
94-10 High Titer Red Oil

ADMINISTRATION

American Bar Assn. to set up special federal labor courts to try cases now are heard by the National Labor Relations Board's staff of hearing examiners. The ABA plan—which appears to take note of the complaint that NLRB acts as prosecutor, judge and jury in such cases—is somewhat similar to the scheme previously advanced by the governmental reorganization commission headed by ex-president Herbert Hoover. Main difference: the Hoover recommendation was to establish a new branch of the Justice Dept. to hear those cases; ABA is calling for an independent “office of administrative procedures and legal services.”



JUDGE WEINFELD: When extending the business, pay the extender.

The judgment represents \$2,500 damages plus expenses, costs and interest.

• In Buffalo, Chandler Wells, who says he wasn't paid for arranging the merger of Durez Plastics and Chemicals, Inc. (Buffalo) with Hooker Electrochemical Co. (Niagara Falls, N.Y.), has won permission to go ahead with pretrial examination of the defendant, Harry Dent, former president of Durez.

• **No Appeal:** Interhandel's (Switzerland) plea for an appeal on the dismissal of its claim for holdings in General Aniline & Film Corp. has been refused by the U.S. Supreme Court. Interhandel is trying to recover its stock in government-controlled GAF. Its claim was dismissed in district court when it failed to produce its own stock ownership records; the dismissal was sustained by the Court of Appeals in Washington, D.C., and appeal was carried to the Supreme Court. However, Interhandel still has until mid-1956 to bring in the records required by the district court.

• **Oxygen Patent Stands:** Hydrocarbon Research, Inc., is dropping its attack on the validity of M. W. Kellogg Co.'s seven-year-old patent on an apparatus for separating oxygen from air. Hydrocarbon filed its suit in Nov. '54, asking the court to keep Kellogg from asserting that Hydrocarbon was infringing that patent by designing and installing oxygen equipment at gasoline plants. The suit was dismissed last week.

LEGAL KEY CHANGES . . .

Problem Contracts: Setting up a merger or a subsidiary through outside agencies needs careful handling, as two breach-of-contract cases illustrate:

• In New York, Federal Judge Edward Weinfeld ordered a judgment of \$7,208.26 entered against Inter-Gulf Chemical & Supply Corp. (New York) because it failed to fulfill a contract for the organization of a Canadian subsidiary. The plaintiff, Leon Lonstein, contracted to establish residence, sales outlets and the subsidiary, provided that the company supply all necessary capital and expenses. Inter-Gulf, according to the complaint, thereafter refused to accept any sales orders or pay expenses (except one).

Wilbur E. Kelley, to president, Walter Kidde Nuclear Laboratories, Inc. (Garden City, L. I.).

Henry H. Reichhold, to chairman, executive committee, Reichhold Chemicals, Inc. (New York).

Bromwell Ault, to director, Procter & Gamble (Cincinnati).

Edward J. Pempsell, to vice-president, Wildroot Co., Inc. (Buffalo).

W. A. Patterson, to director, Good-year Tire and Rubber Co. (Akron).

Frank B. Jewett, Jr., to vice-president and director, Vitro Corp. of America (New York).

Frank Ross, to director, E. F. Houghton & Co. (Philadelphia).

PRODUCTION

ETHYLENE OXIDE CAPACITY

Company	Plant	Process	
		Direct Oxidation (million lbs./year est.)	Chlorohydrin
Allied Carbide	Orange, Tex.	35	
	S. Charleston, W. Va.	20	90
	Texas City, Tex.	150	
	Whiting, Ind.	70	
	Institute, W. Va.	70	
	Seadrift, Tex.	205	
	Torrance, Calif.	50	
Dow	Midland, Mich.		20
	Freeport, Tex.		220
General Aniline	Linden, N. J.	20-60*	
Jefferson	Port Neches, Tex.	20-40*	100
Mathieson	Doe Run, Ky.		100
Wyandotte	Wyandotte, Mich.		25
	Baton Rouge, La.	20*	
Total		660-720	555

* Probable capacity, still awaiting final decision.

More Take the Direct Way

Direct oxidation—which has taken the lead away from the chlorohydrin process—will get the lion's share of the increase in ethylene oxide capacity.

Here's how direct oxidation figures into the plans of ethylene oxide producers whose expansions are expected to boost total capacity by 10-15%.

Fulfilling the optimistic predictions of its early proponents, direct oxidation is rapidly outdistancing the chlorohydrin process in the race for new ethylene oxide capacity.

Allied and Carbide already produce more than half of the billion-pound-plus annual output by direct oxidation. And the direct process will further lengthen its lead with the addition of three new plants.

In the case of two of the new takers, direct oxidation is favored in spite of well-established chlorohydrin installations. Jefferson Chemical (Port

Neches, Tex.) currently produces about 100 million lbs./year by the older method, has long had an interest in the direct route. Its decision to bring in added capacity (best bet: about 20-40 million lbs./year) via the newer process is expected before the end of the year.

And Wyandotte has already committed itself to the use of direct oxidation at its new Baton Rouge, La., plant. Though details are still indefinite, economic factors indicate that a 20-million-lbs./year plant is the logical size for a start.

The third prospective taker—General Aniline & Film—will be a new entrant in the ethylene oxide field. No official decision has been announced by the company, but trade talk has it that GAF will likely build a direct-oxidation unit (at least 20-, possibly 60-million-lbs./year capacity) at its Grasselli plant (Linden, N.J.). GAF's interest, logically enough, stems from its production of ethylene oxide-base detergents. And the proximity of an ethylene supply at Jersey Standard's Bayway refinery (*CW Technology Newsletter*, Oct. 1, '55) makes the Linden site a natural.

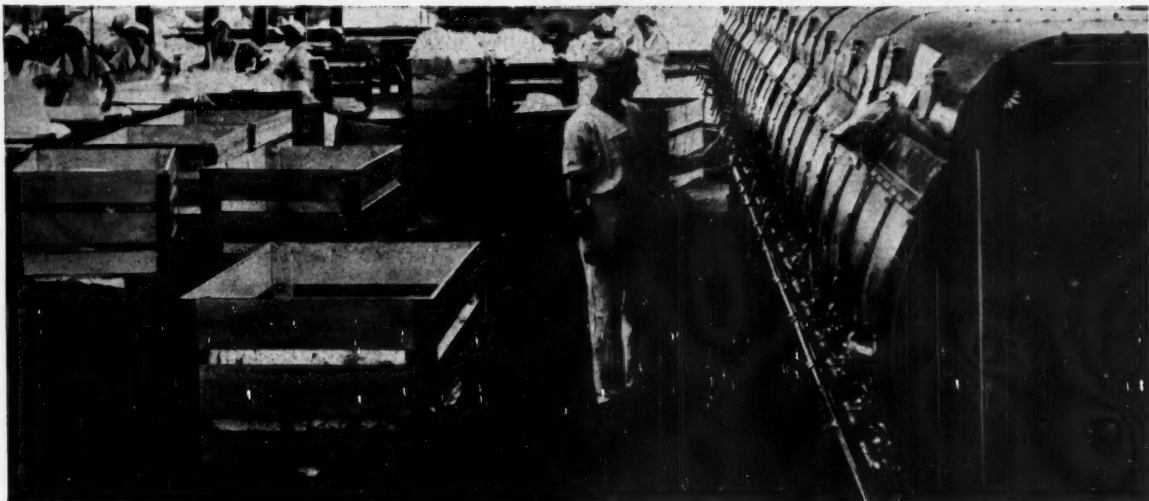
Holding On: Despite the growing trend toward oxidation, the chlorohydrin isn't ready to be counted out. It's firmly entrenched in several existing installations, and at least one producer—Dow Chemical—is sticking with chlorohydrin for its recently announced expansion of oxide capacity. Even Carbide, which has shown a strong preference for the newer method since its first oxidation plant went onstream in 1937, continues to work its original chlorohydrin installation.

In these plants, ethylene is first reacted with hypochlorous acid (formed by bubbling chlorine through water) to yield ethylene chlorohydrin. This product is then hydrolyzed with lime at elevated temperatures to yield the oxide.

Advantages of the two-step method—higher yield, lower initial investment and less-critical operating conditions—were decidedly in chlorohydrin's favor when direct oxidation entered the race. But like its edge in experience and know-how, these factors have diminished in importance as technical advances have improved the performance of the oxidation process.

One Step: In the oxidation process, the oxide is produced by reacting ethylene in the vapor phase with air in the presence of a silver catalyst. One of the toughest problems that had to be solved was close temperature control of the highly exothermic reaction. It was done by constructing the reactor essentially as a heat exchanger, placing the catalyst within narrow tubes around which oil is circulated to remove the heat of reaction.

Probably the greatest advantage offered by direct oxidation is the elimi-



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March 10, 1956 • Chemical Week

nation of problems arising from the use of chlorine. For one thing, oxidation plants aren't plagued with troublesome corrosion. And for another, they can turn out a higher-purity product with none of the inevitable by-products (ethylene dichloride, dichloroethyl ether) produced by free chlorine in the chlorohydrin process.

On a cost vs. yield basis, too, direct oxidation gains by the elimination of chlorine. For though chlorohydrination gives a slightly higher conversion of ethylene, the increase is obtained only at the expense of chlorine—most of which winds up as waste calcium chloride. And with the cost of chlorine more apt to go up than down, the added yield obtained by this method is a questionable advantage.

More Ahead: Outlook for direct oxidation is bright as producers, both here and abroad, continue to push for more oxide capacity. Scientific Design is currently engineering an expansion that will bring Naphtachimie's

(Lavera, France) oxide output to about 30 million lbs./year, and Lummus is believed to be readying the first commercial installation of its oxidation process (piloted and licensed by Shell Development) for a foreign producer.

With proved installations on both sides of the Atlantic to its credit, it's a good bet that fast-striding oxidation will not only keep up the pace, but will also increase its lead over chlorohydrin.

Cooling by Reflection

Radiant heat transfer, widely used to supply heat in processing equipment, has been cast in a new role by candy makers. Using it to reverse the flow of thermal energy, Reflecto Therm, Inc. (Cincinnati) has come up with a radiant cooling system now being readied for its commercial debut.

Radiant cooling is accomplished through the use of reflectors and heat-

absorbing panels that are maintained at 32 F. The cold panels are mounted beneath and on both sides of the product conveyor. To avoid condensation of moisture directly over the product, reflectors are placed above the conveyor. They divert upward-radiated heat to cooling panels at sides.

Though the effects of radiant cooling on crystal formation have not been fully explored, Reflecto Therm reports that the system has been found to alter the physical properties of certain candy coatings. In chocolate, for example, it favors crystallization of the higher melting fat fractions, thereby providing a coating that has a somewhat higher melting point.

Another characteristic that works to the advantage of coatings prone to crack on cooling is the low temperature gradient produced within a radiant-cooled coating. Especially important in the cooling of thicker films, reduced temperature drop across the material minimizes cooling stresses, resulting in fewer and less-pronounced surface cracks.

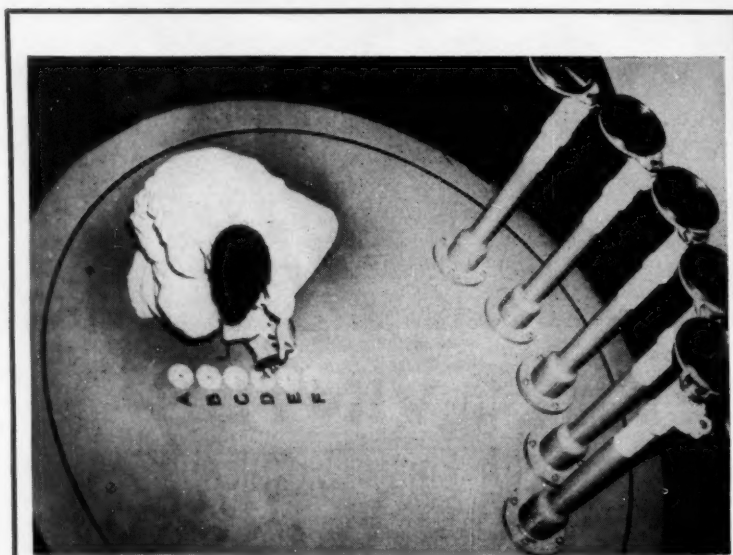
In its first commercial installation, Reflecto Therm's system will be used on chocolate coatings that have previously been cooled by a direct blast of cold air. And though its initial cost is about the same as that of conventional equipment, radiant cooling is expected to provide greater cleanliness, economy of operation, and a higher-quality product.

EQUIPMENT

Water-Vapor Analyzers: According to the experts, the key to peak-efficiency operation of many chemical, petroleum, and metallurgical processes may lie in precise control of water vapor in the atmosphere. And now there are two new instruments especially designed to detect minute concentrations of water in air process gas streams:

- Du Pont's Engineering Research Laboratory has come up with a small, portable analyzer that's said to be sensitive enough to detect one drop of water in the air of an average-sized room. Approximately 10 times as sensitive as the best previous instrument, it detects moisture by electrolysis.

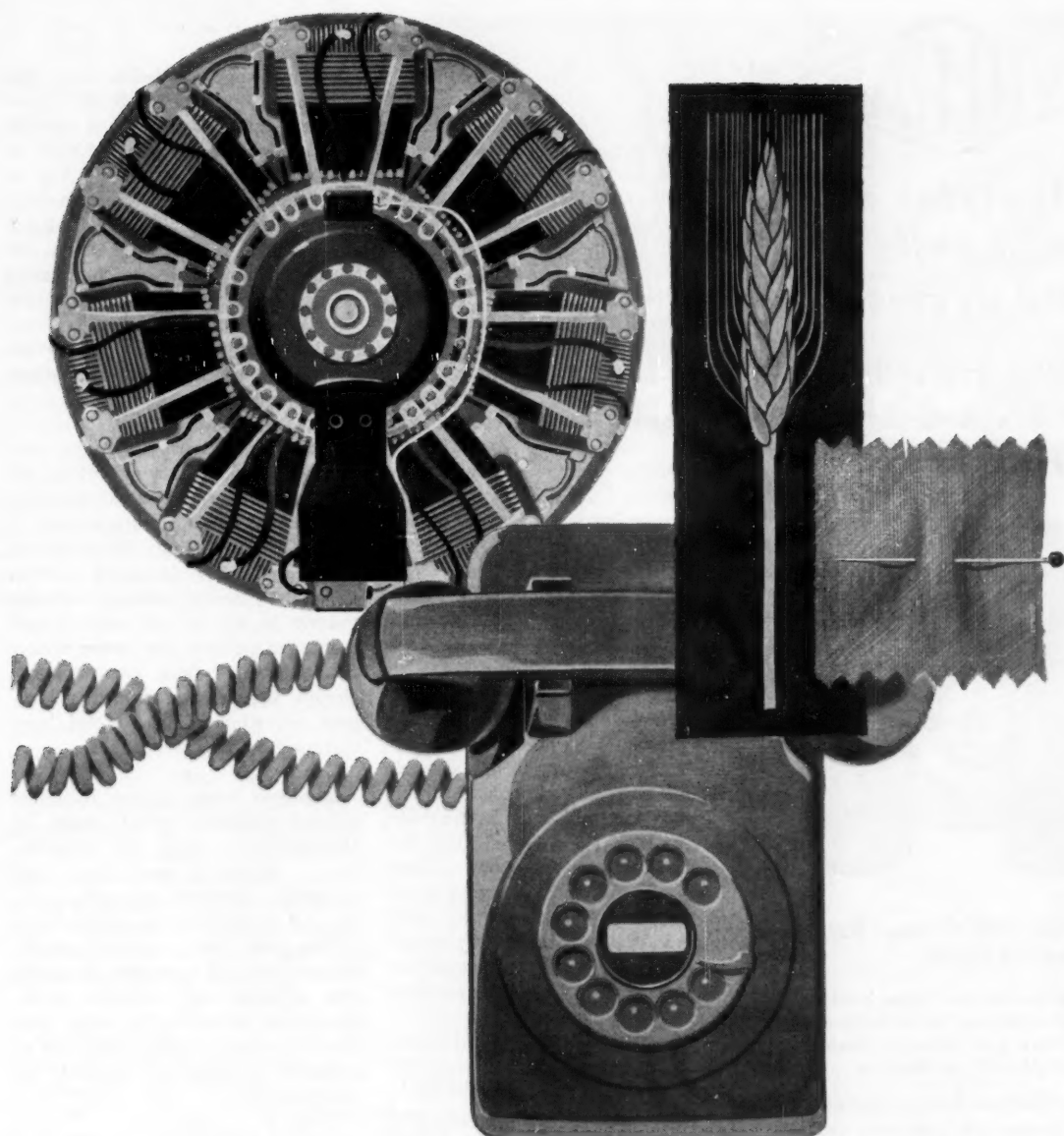
Heart of the unit is a specially designed electrolytic cell through which the sampled gas passes continuously. Water, absorbed by a thin, viscous



Uranium Comes Up by the Letters

CARE AND ATTENTION is the only combination needed for opening the "hottest" safe at AEC's Richland, Wash., plant (operated by General Electric). To remove a can of highly radioactive uranium, the GE technician (*above*) loosens the floor plug from the appropriate,

lettered access tube. "Hot" samples are suspended from circular discs in the heavily shielded underground vault. To position the desired sample under the proper floor plug for removal, discs are rotated by handwheel control (*atop posts at right*).



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PRODUCTION

film inside a fine Teflon tube, is electrolyzed between two spirally wound platinum electrodes. Measurement of the current required for electrolysis is directly related (by Faraday's law) to the mass rate of flow of the water entering the instrument to indicate the moisture content.

The system is accurate enough, says Du Pont, to continuously analyze concentrations down to fractions of a ppm., or to a dew point of less than —80 C.

• The second device, developed by the research and engineering departments of Mine Safety Appliances Co. (Pittsburgh) and Esso Research and Engineering Co., is intended primarily for monitoring the dryness of natural gas in long pipelines.

Operation of MSA's analyzer is based on a new principle, which measures the heat energy exchanged when a gas is adsorbed on or desorbed from the surface of a solid adsorbent.

It does this by splitting a continuously flowing sample of gas into two equal streams, drying one by adsorption, and then passing them alternately through two sides of a detector cell. During a four-minute cycle, the desiccant in each side of the cell is exposed to each stream for two minutes.

A number of thermocouples in the two desiccant beds detect the small temperature changes caused by the adsorption-desorption cycle, generate an emf. that can be related to moisture content.

The system has been used in instruments having a full-scale range of 100 ppm. water by volume, says MSA, and appears capable of satisfactory operation at even lower full-scale ranges.

Adjustable Vibrator: The Cleveland Vibrator Co. (Cleveland) is now supplying electric bin vibrators with a new feature that permits the force of vibration to be varied without changing weights. The trick is in the arrangement of two eccentric weights (on each end of the unit) that can be interleaved to different degrees to regulate the impact. Three models are available: RC-10 for 140-550 lbs. of impact, RC-30 for 385-1,110 lbs., and RC-50 for 750-2,250 lbs.

Abrasive Cleaner: A completely self-contained abrasive cleaning tool—the Clemco Educt-O-Matic—has been

developed by Clementina Ltd. (San Francisco). It's designed to replace slower, less efficient manual methods of cleaning metal and other types of surfaces preparatory to welding or the application of surface coatings. Light in weight (only 11 lbs.), it utilizes a small cyclone separator to discard dust into an attached bag, return abrasive material to its feed hopper for reuse.

Unit operates on any 33- to 60-cfm. air supply connected to its single ½-in. air line.

• **Control Monitor:** Automatic controls are fine when they're working, but they can mean real trouble when they fail in service. To warn operators of control circuit failures, Westinghouse (Pittsburgh) has developed a fault finder that, it says, instantly indicates trouble in any of six continuously monitored circuits. The device is electrically isolated from the monitored circuits, signals even momentary failures by extinguishing a signal lamp that must be reset manually.

• **Abrasives Pump:** A new hydraulic pressure exchange pump, made by Manton-Gaulin Mfg. Co. (Everett, Mass.), features a novel design that completely eliminates plungers, packing, and contact between product and moving parts. Said to minimize maintenance costs and down-time in service with abrasive and corrosive muds, slurries and solutions, the pump provides a uniform, steady discharge at pressures to 2,000 psi., capacities to 120 gpm.

• **Pulley Lagging:** Pulley slippage on belt conveyors operating on steep slopes or under wet service conditions can be eliminated, says Hewitt-Robins, Inc. (Stamford, Conn.), by the use of its new Maltese Cross Double Chevron pulley lagging. The lagging has a grooved, antislip surface that transmits power by pressing thousands of diamond-shaped rubber grippers against the underside of the conveyor belt.

• **Leak Detector:** A nondestructive, atomic-energy leak detector has been developed by Reed-Curtis Nuclear Industries, Inc., Nuclear Division of American Electronics, Inc., for testing hermetically sealed parts and containers. Dubbed Radiflo, the system

can be used to check either positive or negative sealed pressures, is said to provide a nominal sensitivity of 1 cc./500 years.

Air-Dry Coating: Shutt Process Equipment Co. (St. Louis, Mo.) is out with a new All-Coat air-dry epoxy coating that, it says, has properties previously available only in materials cured at high temperatures. Suitable for coating process equipment and tanks too large to receive conventional baked coatings, All-Coat incorporates a catalyst that promotes air curing, even at temperatures as low as 40 F.

Plastic Tanks: A new line of polyethylene tanks equipped with draining faucets is now available as off-the-shelf items from American Agile Corp. (Maple Heights, O.). Supplied with 3/4-in. faucets, the tanks come in four sizes from 9x9x9 to 17x17x17 in.

Ribbon Mixers: The Cincinnati Hildebrand Co. (Cincinnati, O.) has just placed on the market a new series of heavy-duty ribbon-type mixers. Eight models, spanning the 25-450-gal. capacity range, offer a choice of six different agitator designs. Included are: special agitators to provide either end- or center-discharge of the mix, "Tee-head" agitators for reducing lumpy-type mixes, and a "cut it in" type agitator for blending shortening.

Air-Water Flowmeter: A new ball-type flow indicator, by Schutte and Koerting Co. (Cornwell Heights, Pa.), provides a dual scale for the approximate measurement of either water flow in gpm. or air flow in cfm. Made of bronze, the indicator is available in 1/4- to 2-in. pipe connection sizes.

Slurry Tamer: For efficient concentration of excessively corrosive slurries, Equipment Development Co., Inc. (Montclair, N.J.) offers a new type of vacuum-type thickener that features filter elements molded of man-made rubber and Good-rite Resin 50—a B. F. Goodrich Chemical high-styrene material. Filter sections are mounted over a stainless steel tube to form a filter grid about 6 ft. long, are said to be less expensive and more acidproof than the stainless steel wire, which was previously used to support the filter fabric.

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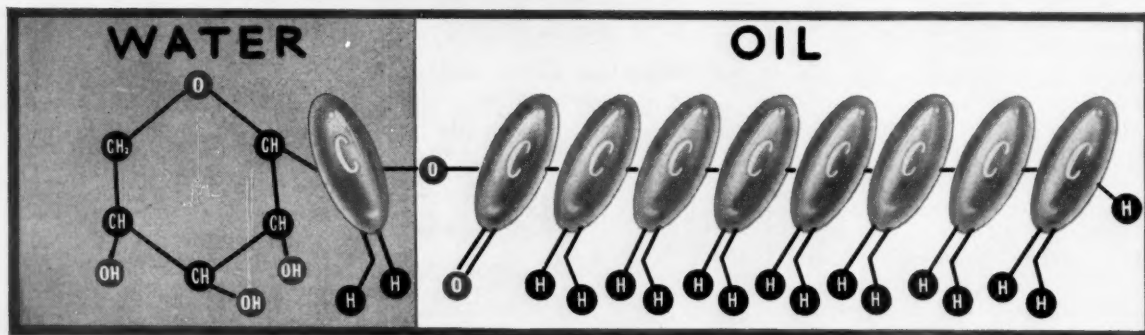


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CHEMICALS DIVISION

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What Every Chemist Should Know about **SPAN**® Emulsifiers...



SPAN oil-soluble emulsifiers consist of variable numbers and sizes of lipophilic hydrocarbon groups having high affinity for oil, combined with water-soluble sorbitan groups.

Anyone who formulates or manufactures emulsified products will find the family of SPAN emulsifiers handy to know.

This group of surface active agents is notable for its affinity for and solubility in oil. A look at the chemical nature of these products will show you how they get that way.

Chemical Nature

The SPAN emulsifiers are derived from sorbitol. They are sorbitan (sorbitol anhydride) esters of common fatty acids, lauric, palmitic, stearic and oleic. This combination of chemical components gives an excellent means of dispersing water into oil. The sorbitan group, being water-soluble, has affinity for the water phase. The long hydrocarbon chain of the fatty acid, on the other hand, gives an even stronger affinity for the oil part of the emulsion . . . hence the SPAN materials are predominantly oil-soluble.

Variety of Emulsifying Properties

By changing the length of the fatty acid chain in the emulsifier, Atlas produces varying degrees of affinity for oil. SPAN 20, for example, is made from lauric acid (12 carbon atoms) and has less affinity

for oil than SPAN 80, which is derived from 18-carbon oleic acid. On the Atlas HLB (Hydrophile-Lipophile Balance) scale for evaluating emulsifiers, SPAN 80 has a lower value than SPAN 20. The lower the HLB number, the greater in general is the material's solubility in oil and its ability to hold water in dispersion in water-in-oil emulsions.

Uses

SPAN products are often used as the sole emulsifiers in making water-in-oil (oil-dilutable) emulsions; sometimes the addition of a small amount of a water-soluble emulsifier such as a TWEEN® product will make the emulsion easier to prepare. In oil-in-water (water-dilutable) emulsions, where the predominant emul-

sifier is generally a water-soluble type, a small amount of SPAN emulsifier will often assist in making the emulsion more stable.

Because of the manner in which they "absorb" water into a surrounding body of oil, certain SPAN products have also been found valuable as additives to oil to inhibit corrosion, in addition to their usage as emulsifiers.

Atlas produces over 100 surfactants. We are at your service to assist in solving surfactant problems such as those related to production of agricultural chemicals, paints, polishes, oil additives, oil production aids, cleaning specialties, textile specialties, cosmetics, pharmaceuticals and foods.

THE FOLLOWING ARE THE PRINCIPAL MEMBERS OF THE SPAN SERIES:

		HLB Value	Color and form @ 25° C
SPAN 20	Sorbitan monolaurate	8.6	Red amber oily liquid
SPAN 40	Sorbitan monopalmitate	6.7	Tan wax
SPAN 60	Sorbitan monostearate	4.7	Light cream wax
SPAN 65	Sorbitan tristearate	2.1	Light cream wax
SPAN 80	Sorbitan monooleate	4.3	Amber oily liquid
SPAN 85	Sorbitan trioleate	1.8	Amber thin oily liquid

chem-memos

Buying sorbitol by the tank car or tank truck saves money, simplifies storage

Several important kinds of savings are possible when you purchase sorbitol solutions in bulk. For example, when you buy 20,000 pounds or more of SORBO® 70% sorbitol solution, you save \$200 or more by buying in tank cars or trucks, compared with the same amount of material purchased in drums (based on present prices F.O.B. our plant). This same price advantage holds true for SORBITOL SPECIAL (76% solution of sorbitol and its anhydrides) and ARLEX® industrial humectant solution (83% solution of sorbitol and related polyols). You're sure of using *all* the material, too, for tank cars or tank trucks are much easier to drain thoroughly than drums.

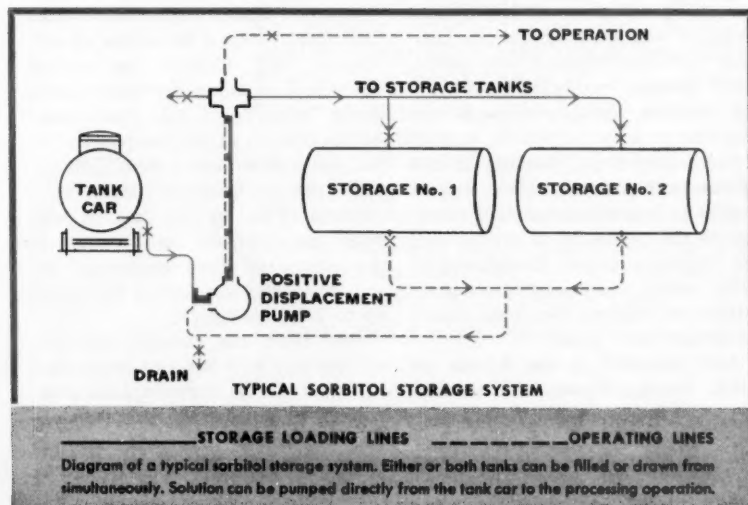
Receiving, storage and delivery to process can be completely mechanized with minimum expenditure for equipment. The diagram shows a typical system using two storage tanks, in which sorbitol can be pumped to storage or to the process directly from the tank car. Prob-

lems of warehousing drums are eliminated.

Sorbitol is easy to store. It is non-corrosive, non-inflammable, non-decomposing, and non-volatile. It may be mixed with other polyols, sugar solutions and sulfonated oils without adverse effects. For storage tanks, stainless steel or aluminum are preferred . . . with alternate construction of protective resin coating or lined tanks permissible depending on anticipated length of storage and purity required.

For ease of handling, sorbitol solutions should be kept at 70°F. or higher. This may be done by circulating hot water through submerged coils of stainless steel or aluminum.

Ask your local Atlas representative for recommendations on your specific storage problem. Ask him, too, about the cost savings that you can enjoy by bulk purchasing.



New Aquaness Department Serves Oil Industry with Latest Chemical Developments

Atlas service to the oil-producing industry recently took another forward step with the acquisition by Atlas of the Aquaness Corporation, of Houston, Texas. Aquaness has specialized in manufacturing and sales of chemicals for the oil industry since 1947. Recently, Atlas research activities have led to development of several new chemicals for this industry, and the two organizations thus complement each other. The new organization is known as the Aquaness Department of Atlas Chemicals Division. Fritz E. Fuchs, who was vice president and general manager of Aquaness Corporation, is manager of the new Aquaness Department.

Aquaness has specialized in corrosion and scale inhibitors, bactericides, and dehydrating and desalting compounds used in conjunction with oil production and refining, under the trade names of Aquaness, Cronox and Calnox.

Atlas is probably best known in the oil fields for its explosives. The company began making surface active agents (variously used as emulsifiers, wetting agents and detergents) some twenty years ago, and has become a leader in this type of product for foods, cosmetics, pharmaceuticals, cleaning compounds, polishes and insecticide concentrates.

Through its research in the chemistry of surface active agents, Atlas recently developed several materials of special interest to the oil industry. Among these are ATPET® water-block removal compound and a new series of drilling fluid emulsifiers. The latter are available through leading drilling mud companies.

The Aquaness Department, backed by Atlas research, will be able to introduce new chemical products to the oil industry faster, and provide better technical service than was possible for either of the two companies alone. The Department's headquarters is in Houston.



PULVERIZING AND SPRAYING: Major steps in road-bed stabilization, they focus attention on . . .

Potential Profits in the Open Road



Armour & Co., the Indiana Highway Commission, and Union Starch and Refining Co. (Columbus, O.) recently completed joint tests of diocetadecyl dimethyl ammonium chloride (Armour's Arquad 2HT) as a road-bed stabilizer. The chemical reportedly produces a subgrade comparable in properties to soil cement, or aggregate, at about one-fifth the cost of these conventional materials.

It's applied by spraying (one part of the compound to 1,000 parts of the soil's dry weight), is said to impart a high degree of resistance to surface water and abrasion. Soil must be pulverized before and after treatment in order to insure uniform distribution of the additive. But the treatment still is claimed to offer significant savings in labor and machinery over the use of soil cement or aggregate.

Cost has thus far proved the biggest obstacle to chemicals seeking uses in road building. Such materials include calcium acrylate, vinyl acetate-maleic

acid copolymer, chrome-lignin, aniline-furfural and fly ash-calcium chloride mixtures. Another that has been tried for this purpose is American Cyanamid's AM-955 (*CW*, Apr. 9, '55, p. 70), which is now finding limited use in stabilizing wet soil. It must be mixed with other agents (e.g., calcium acrylate) before it will significantly increase load-bearing ability.

Right now, the quaternary is sure of a close look by the growing number of engineering firms* working on soil-solidification problems. These include backfill in house construction, reduction of the capillarity of farm ponds and irrigation ditches, flocculation of turbid waters, and imparting water resistance to highway shoulders, tennis courts and farm yards.

Also interested is the Bureau of Public Roads, whose joint govern-

ment-industry soil stabilizer research project (*CW*, Nov. 13, '54, p. 96) is being vigorously pursued via agreements with chemical firms (e.g., American Cyanamid, Dow, Du Pont, among others).

A target cost is 10-13¢ for enough chemical to treat a cubic foot of soil. Arquad 2HT (37¢/lb. in tank-car quantities)—a tallow derivative—costs about 7¢/cu. ft. of soil. That's based on the amount of the compound, 797 lbs., required to treat a 400x22-ft. test strip (near Cloverdale, Ind.) to a depth of 6 in. In this case, as with other test strips, the small amount of the compound used penetrated the soil thoroughly (including clay clods up to 2 in. diameter).

One effect the cationic material's success may have is to stir reappraisal of other fairly commonplace compounds for possible use in soil-stabilization. Arquad 2HT has been in commercial production for seven years.

*Such as Manu-Mine Research and Development Co. (Reading, Pa.), Soil Testing Services (Chicago), Penetryn Systems, Inc. (Cleveland), Chicago's Intrusion Prepack Co. and Chemical Soil Solidification Co.

FMC in the chemical world

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Important ingredient in this unique mineral powder composition is Magnesium Oxide — of which our Westvaco Mineral Products Division has long been America's leading producer. As part of its continuous application research to broaden markets, Westvaco cooperated in the development of FIRE-BAN from inspired idea to practical product.

This enthusiasm to pioneer new product applications is typical of all FMC Chemical Divisions . . . one more reason why FMC attained growth leadership in the chemical world.

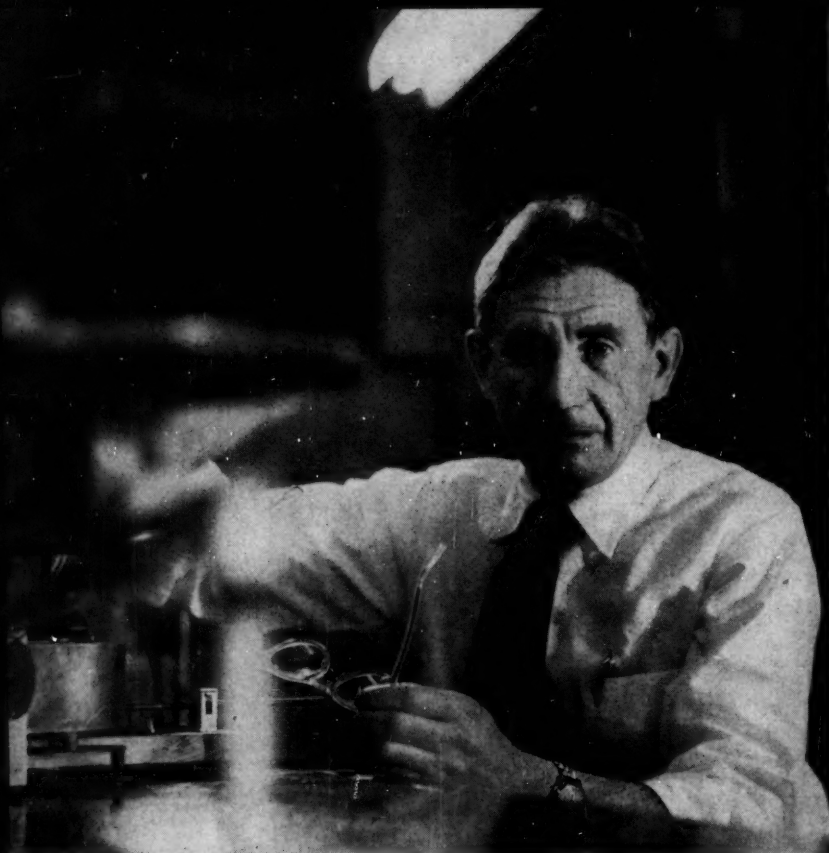
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WYETH'S SEIFTER: For chlorpromazine, a competitive kin.

Newest Chemical Calmer

Latest candidate for the expanding circle of tranquilizing drugs is a chlorpromazine-related compound developed by Wyeth Laboratories (Radnor, Pa.). Called promazine, it was recently uncovered by a research group working under Wyeth's Joseph Seifter*. The newcomer is quick-acting and reportedly does not give rise to some of chlorpromazine's side effects.

Unlike chlorpromazine, its calming effect is not accompanied by depression and substantial drop in blood pressure. But neither is it as potent as the former. And there appears to be less danger of contact hepatitis—a side effect that is a comparatively common consequence of handling chlorpromazine.

The new agent's speedy action may prove to be its major selling point. It is said to require only 5-10 minutes to produce a tranquilizing effect that is achieved only 3-4 hours after start of reserpine administration. Costly nursing care may thereby be reduced.

*Director of Wyeth's Institute for Medical Research.

Tradenamed Sparine, promazine differs from chlorpromazine by lack of chlorine on the second carbon atom. Chlorpromazine is 3-chloro-10-(γ -dimethylaminopropyl) - 2 - phenothiazine hydrochloride.

Wyeth started its clinical studies on promazine about 4 months ago at the District of Columbia General Hospital, where it was administered to more than 550 patients suffering from a variety of acute disturbances such as delirium tremens and hallucinations. The drug was given intramuscularly or orally in doses ranging from 50-400 milligrams.

Wyeth says it is ready to market promazine (Sparine) as soon as it gets Food and Drug Administration clearance, expects the cost of the drug to be competitive with other tranquilizers. Its application for an NDE (no deleterious effect) certificate was filed two months ago.

If FDA approval is forthcoming, promazine will join reserpine (Ciba, Pfizer, Penick, Riker, Squibb); chlorpromazine (Smith, Kline & French);

RESEARCH

meprobamate* (Wallace, Wyeth); Frenquel† (Merrell) in mental therapy.

Sales of these established drugs are estimated at \$60-65 million annually. And forecasts put tranquilizer sales volume at an eventual \$500 million/year. By then, pharmaceutical circles are betting, research will have turned up still more chemical calmers.

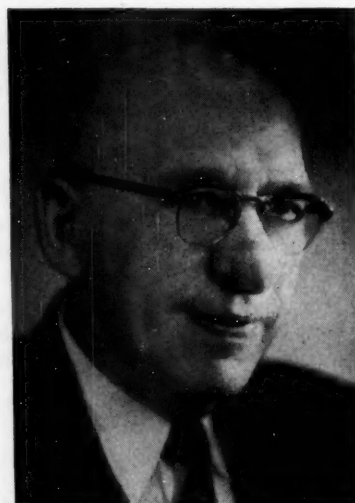
Tax Fray Update

This spring, independent research laboratories are slated to launch their next attack on section 501 (c) (3) of the 1954 tax code—which grants tax exemptions to nonprofit scientific organizations doing testing for public safety. That's when the Internal Revenue Service is expected to schedule public hearings on its proposed regulation (published last month) to implement the statute (CW, Jan. 22, '55, p. 49).

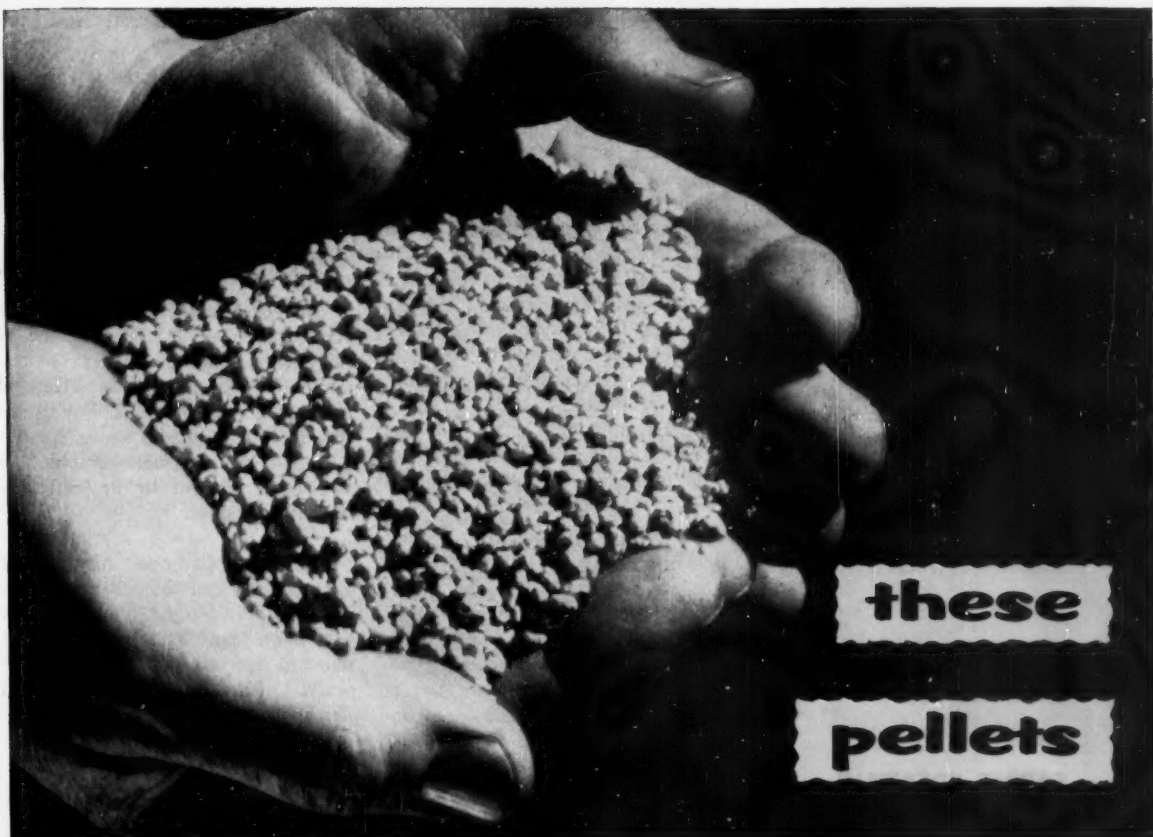
IRS's proposal allows exemption for nonprofit groups "formed to test consumer products, such as electrical products, to determine whether they are safe for use by the general public."

Carrying the fight for the commercial labs will be the American Council of Independent Laboratories, Inc. (Washington, D.C.). At the hearing, ACIL will have a chance not only to make its case against the proposed rule, but also to come up with its own

*2-methyl-2-n-propyl-1, 3-propanediol dicarbamate.
† α -(4-piperidyl) benzhydrol hydrochloride.



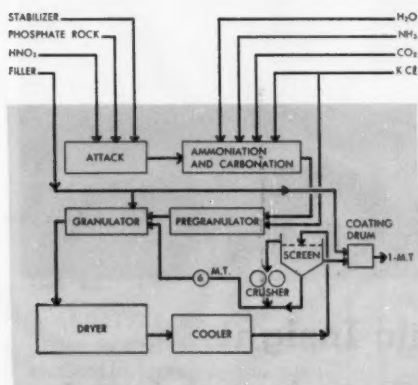
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BB-7

RESEARCH

ideas on how the revenue agency should interpret the statutory exemption.

Pending the start of the hearings, ACIL Executive Secretary Harold Dudley isn't disclosing the strategy his group intends to pursue. But in a letter to IRS, Dudley has outlined ACIL's objections to the proposed rule, states that he wants the proposed interpretation deleted and completely rewritten to define public safety and to set up "adequate safeguards to prevent abuses of this exemption."

ACIL also hints that it will seek either a tighter definition of "non-profit" or a stringent salary ceiling for nonprofit institute executives.

APPARATUS

Pump Plate: Central Scientific Co. (Chicago) is out with a new, steel pump plate for experimental vacuum evaporation, sputtering and melting of metals. It's also said to be useful for

testing electronics components in high-altitude projectiles studies. Two types are available: one for direct connection to a mechanical vacuum pump; the other for use with an oil diffusion pump.

PRODUCTS

Analytical Addition: Acid Rubeanic AR (dithiooxamide) is the name of Mallinckrodt Chemical Works' newest addition to its line of colorimetric and chromatographic reagents. For use in spot tests, colorimetric analysis methods, and paper chromatography, the compound is said to be especially sensitive to copper.

Standards: Carnegie Institute of Technology's Petroleum Research Laboratory (Pittsburgh) is offering five new American Petroleum Institute standard hydrocarbon samples: cyclopentyl methyl sulfide, cyclopentyl mercaptan, di-n-propyl disulfide, cyclo-



WIDE WORLD

Video for Atomic Insight

WHAT IS BELIEVED TO BE the first television camera for use inside an atomic reactor is shown with its designer, W. L. Cruickshank, of England's Pye Ltd. (Cambridge). The camera (30 in. long, 3½ in. in diameter) survives temperatures of 150-200 C, enables researchers to observe atomic proc-

esses from a safe distance. Now undergoing tests at the Atomic Energy Research Establishment (Harwell), the camera is slated to be installed at the Calder Hall atomic power station (Cumberland). Carbon dioxide is used to cool the instrument and control cables.

hexyl mercaptan and ethyl n-propyl sulfide. Price: \$50/5 ml.

LITERATURE

Corning Catalog: A revised catalog of custom-made Pyrex glassware is now available from Corning Glass Works (Corning, N. Y.). Tabbed No. CA-2, it describes over 6,000 special glass apparatus items.

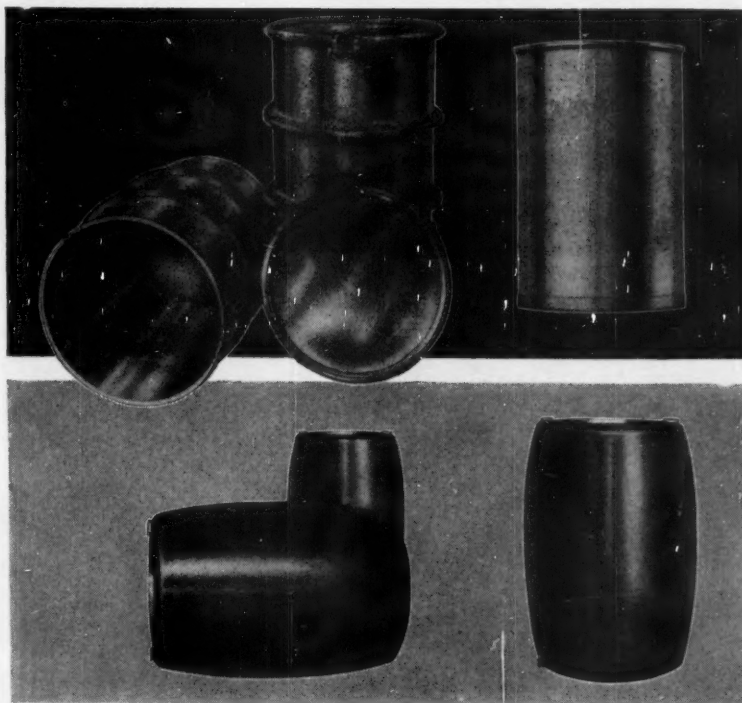
Molybdenum Memos: Climax Molybdenum Co.'s (New York) new publication, *Refractory Molybdenum Silicides*, includes information on preparation, applications, and chemical, physical and mechanical properties of the compounds. Fifty-two references are included.

Spectrographic Supplies: Just published by Jarrell-Ash Co. (Newtonville, Mass.) is a new spectrographic supplies catalog.



Sharp Eye for Carbon

AS LITTLE AS 0.0005% of carbon in steel reportedly can be measured with this new vacuum-fusion device developed at U. S. Steel Corp.'s Monroeville, Pa., research center. The instrument measures carbon dioxide generated by burning a steel sample in pure oxygen, is one proposed answer to the growing need for more precise carbon control in special-purpose steels.



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CONTAINERS AND PRESSURE VESSELS FOR GASES, LIQUIDS AND SOLIDS



MONSANTO'S GILLIS: In 50 years, no such thing as a chemical company.

Growth: Where and How?

The days of the chemical industry as a distinct, separate entity may be numbered—that's the probability Monsanto's vice-president of marketing, John L. Gillis, presented this week at the Commercial Chemical Development Assn.'s annual meeting in New York's Statler Hotel.

Assembled to assess the double poser of "Why Chemical Growth and How," sessiongoers heard the significance of and the need for guideposts in the present pattern of chemical industry expansion. From Gillis came analysis and prediction; from Theodore Hodgins, Reichhold's research and development vice-president, came concrete suggestions for solving the corollary problem of growth: "Do you make or buy your raw materials?"

It's Gillis' contention that expansion, not only of the chemical industry but also of nonchemical concerns into the chemical field, is blurring the border of demarcation. In the past three years, Gillis asserted, chemical growth-by-acquisition included 17 horizontal integrations, 3 vertical moves toward raw materials, 9 toward the consumer, 6 expansions of nonchemical firms

into chemicals, and 2 invasions by chemical companies into other fields.

Outstanding in the analysis of these expansion moves:

- No single means predominates.
- The chemical industry is trending toward the consumer.

Reasons abound for the current trend of chemical growth. They are:

- Desire for profit preservation and position stabilization. The natural development of industry from raw material interests logically leads to product upgrading, and to complicated manufacturing.
- Vertical integration by traditional customers. This tendency, Gillis stressed, obliterates former markets, necessitates new fields, new products.
- "Accelerating pressure of funds" requires new avenues for investment.
- Marketing know-how security. It's getting tougher to compete technically. By veering toward the consumer and establishing a distribution system, new competitive areas unfold, and hence offer new security, claimed Gillis.

The upshot: companies must grow or get hurt. And in expanding, added

DISTRIBUTION.

Gillis, the corporation of tomorrow may not specialize in a single field.

To Buy or Not to Buy: Growth almost always spawns a raft of difficult make-or-buy decisions. And, cautioned ex-Business & Defense Services Adm. division head Hodgins, a company can't be too thorough in its evaluations. The main beacon for bearing-taking: return on investment. At best, it should be maximum; at worst, equal the average of industry operating in the same area.

Summoning the years of his experience and cases at Reichhold as examples, Hodgins proposed four measures of return-on-investment.

- Volume. This must be large enough to justify economical production, yet small enough to maintain the original sphere of corporate interest.
- Logistics. Freight rates can often determine the make-or-buy decision.
- Policy. Procurement must be viewed in light of company policy on vertical and horizontal integration.

- Balance. Essentially this means weighing investment accrual from raw material production against that from alternative uses of money.

CCDA Honors: Luncheon speaker at the CCDA meet was J. R. Hoover, president of B. F. Goodrich Chemical and Manufacturing Chemists' Assn.

At the evening banquet, CCDA's Annual Honor Award was presented to Dow Chemical's Donald Ballman (*CW*, Feb. 11, p. 95).



REICHHOLD'S HODGINS: The yardstick is return on investment.

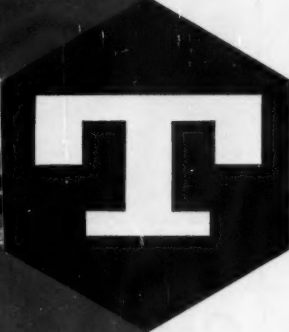


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JAN-T-171 Specifications
Federal Specification TT-T-548a



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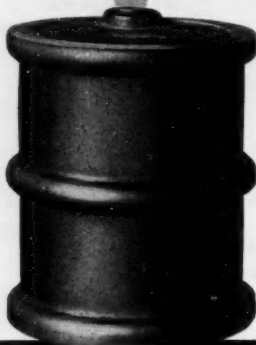
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C-B'S BOYER (inset): 'This needn't have happened.'

Compressed Gas Flare-Up

Within a few weeks a bill will be introduced in Congress that is certain to have a walloping effect on suppliers and users of compressed gases; if the bill passes—and chances are it will—rigid government control will replace the industry's current self-regulation, particularly in marking of portable gas cylinders.

Chief opposition to the upcoming legislation, which will be introduced by Congressman J. Harry McGregor (R., Ohio), will undoubtedly come from the Compressed Gas Assn. And the protests will have impact. Reason: more than 95% of the industry is represented by this group.

Association spokesmen strongly insist that the government should stay out of the picture, aver present industry regulations* are the best that can be devised. "However," adds CGA, "if Congressman McGregor wants to make our own voluntary standards the law, we'll go along. If he tries to set up new ones, we'll fight him."

On the surface it appears to be a battle between McGregor and CGA. Actually, the hassle is between CGA and Ralph Boyer, vice-president and chief engineer of Cooper-Bessemer Corp. (Mt. Vernon, O.). Boyer, four of whose test engineers died in an

explosion last Sept. 6 as a result of a mix-up in gas cylinders, has since turned crusader, is leading the fight for stricter control of marking practices.

Touching It Off: Some of the details of the accident that sparked Boyer's campaign are hazy; but this is clear: it resulted from a substitution of oxygen for nitrogen. C-B's engineers sent a truck to their supplier, Mansfield Oxygen Acetylene Co., to pick up three tanks of previously ordered nitrogen. Cooper-Bessemer's driver loaded three unlabeled tanks designated by the supplier as nitrogen, and delivered them to the C-B test house. Gas was connected, but the explosion didn't happen immediately, because the test machine contained some helium (also used for inerting) and it required some time for oxygen content to increase enough to react violently with lubricating oil.

It was later established that the tanks containing oxygen belonged to a contractor, Richland Construction.

When the cause of the explosion was pinpointed, Cooper-Bessemer sent a sharply worded note to CGA, asking for drastic changes in cylinder identification procedures. Among other recommendations C-B urged: (1) larger lettering (present CGA standard calls for letters 1/25th of cylinder's diameter, minimum 1/4 in.); (2) special fittings for cylinders containing oxygen; (3) uniform color code.

*CGA members use two main standards: American Standard Z48.1, for marking cylinders; American Standard B57.1, for cylinder valve outlet and inlet connectors.

The last recommendation—often proposed—is a sore spot for CGA. The association has always shied away from color coding, views it as a potential hazard rather than a safeguard. It argues that if a man begins to depend on color, he'll ignore the best safeguard of all, the lettering on the cylinder. Other objections to color coding: color-blind operators; possible effect of plant lighting on colors.

Industry Confab: Unhappy with CGA's response to his recommendations, Boyer accepted an invitation to sit in with the organization's safety section during its Jan. 23 meeting. Accompanying Boyer at the meeting were three Army engineers. Representing CGA were members from Du Pont, Canadian Industries Ltd., Southern Oxygen, Linde, Hooker, Virginia Smelting, Mathieson, Liquid Carbonic, and Peoples Supply, Ltd.

Outcome of the get-together: general accord on lettering of cylinders; stalemate on valve connection (Boyer thinks present CGA standards on connectors are good—but not used); strong disagreement on use of color. Boyer urged adoption of the Dept. of Defense practice (MIL-STD-101) of using a few primary colors to classify gases as to effects, plus banding to identify gas. As a compromise he offered to accept primary colors without banding.

CGA insisted that the government system doesn't work, that it is being loosely handled, and that many government cylinders are not painted. At this juncture one of the Army engineers, Eugen Von Loesch, stated that any unmarked government cylinders were those put into storage prior to the inception of the coding program. He then asked if anyone in the room would be willing to say they had filled government cylinders without first painting them. The not-too-surprising response: no.

Even conceding that government coding does work, CGA says that the government uses relatively few of the large number of gases it would be necessary to band if the practice were extended throughout industry.

Though not satisfied with the existing standards of CGA, Boyer's biggest complaint is the prevailing lack of enforcement. Even if all his recommendations were accepted, he feels that there's little guarantee they'd be applied. To bolster this contention he

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There have been others . . .

Cooper-Bessemer's was not the only accident due to a mix-up of compressed gases. Note these:

- A cylinder labeled nitrogen was connected to an inerting line and found to contain hydrogen. Result: no explosion, but \$750,000 worth of equipment burned out.
- An oxygen cylinder mistakenly included in a group of nitrogen cylinders because of similar color-marking. Result: explosion of terrific violence—heavy equipment damage.
- Nitrogen-filled cylinder mistakenly used for oxygen in a hospital. Result: three dead of asphyxiation.

alleges that CGA merely gives lip service to the regulations it already has. Boyer insists federal supervision is necessary to put teeth in the standards. He resists state jurisdiction on the grounds it would take too long to push through, result in a legal hodgepodge.

In the Works: Congressman McGregor, a personal friend of Boyer's, has been in on the hassle from the start. At the outset, McGregor was strongly determined to put a bill into effect that would apply stringent conditions to marking of cylinders. In a letter (Jan. 16, '55) to CGA's secretary-treasurer, F. R. Fetherston, he wrote, "I am going to see that it is illegal for any manufacturer to fill any cylinder with any gas unless that cylinder meets all the prescribed regulations. I further say that I am going to do everything I can to make it illegal for an explosive gas to be placed in any receptacle or cylinder unless it is clearly and definitely marked and of such nature that it cannot be connected unless a wrench is used."

In the same letter, McGregor complained about the "runaround" and "many excuses" he had received relative to the proposed legislation and warned: "... if the legislation is more rigid than possibly it should be, it will be caused by the lack of cooperation on the part of the people who are directly connected with the problem."

In the last few weeks, McGregor has moderated his tone, is now something less than a zealot. When questioned by *CW* about the upcoming bill, he said he wasn't trying to shove a bill down anyone's throat; wants previous agreement of all interested parties on solution, legislative or otherwise.

Main efforts of McGregor may be

expended in trying to get CGA to admit there is a problem. Admittedly there was an accident because of a mix-up of gases. What CGA won't concede is the fact that color coding and other protective methods would have prevented it. To back this stand, CGA points out that C-B used unmarked tanks ("they should have returned them"), that an adaptor was used to hook up threaded connections.

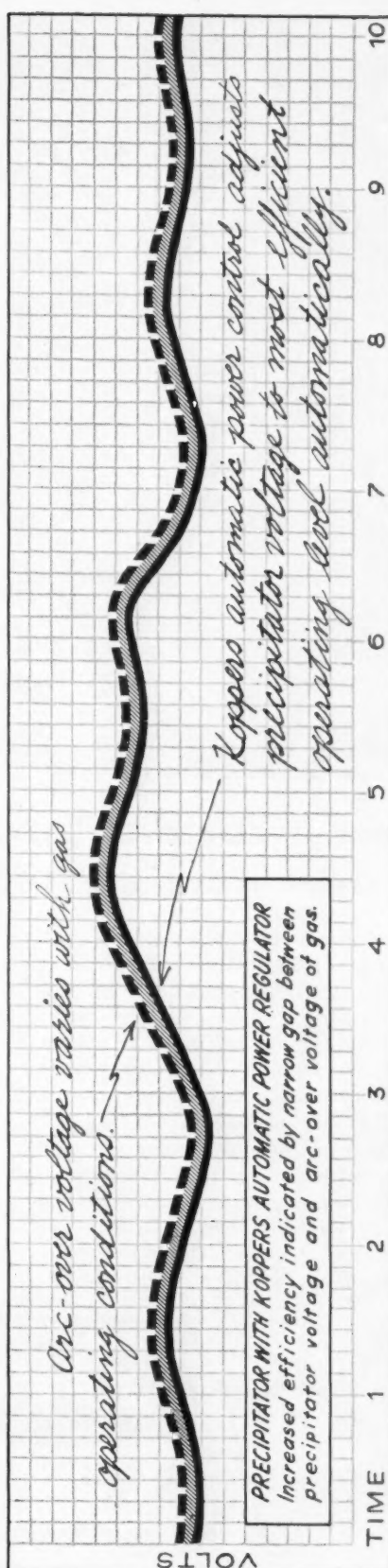
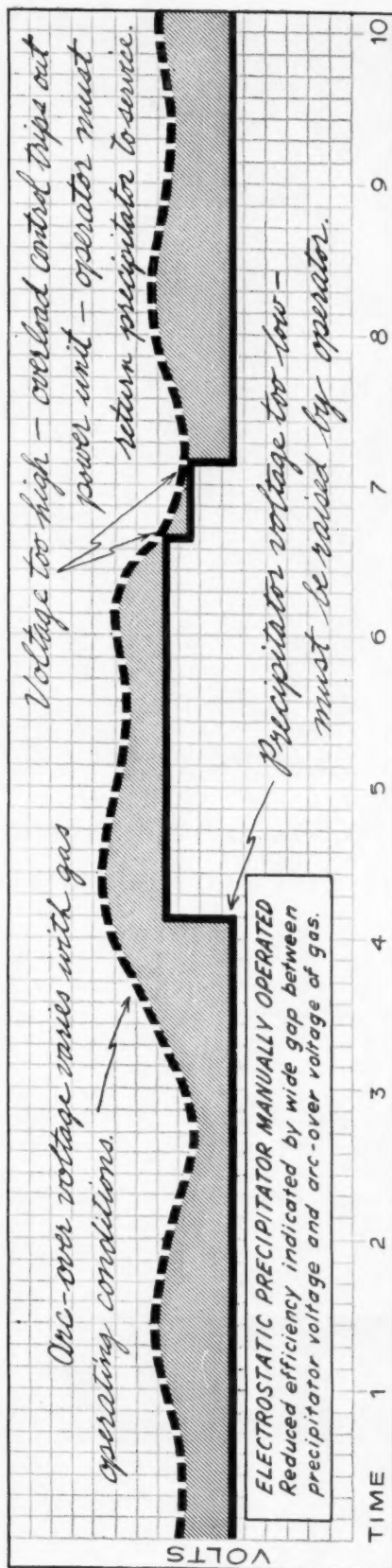
The gas association will undoubtedly underscore the fact that although thousands of cylinders are in daily use, accidents involving them are extremely rare. This might appear a strong argument for the CGA side. Actually it's not. Reason: accidents involving mix-up of gases aren't publicized—are played down deliberately by both insurance companies and manufacturers. Another silent partner (and worst offender) in the hush-hush conspiracy are hospitals—ironically enough the ones who most depend on color coding.

Slugfest Brewing? So far, arguments on both sides have had a high moral tone. When it hits the legislative probing stage, look for the professed altruism to go out the window as charges and countercharges come crashing through the door.

Boyer can expect to be branded a phony crusader trying to cover his own culpability in an effort to avoid a lawsuit. Similarly, CGA can look forward to being accused of callous indifference to the public safety.

The in-fighting hasn't started yet, but when it does, it should be a real brawl. *CW*'s guess on the outcome: federal control of marking procedures as spelled out in existing voluntary standards—no color coding.

EFFICIENCY GRAPHS: Comparative graphs show the relative difference between MANUAL and AUTOMATIC power operation for electrostatic precipitators



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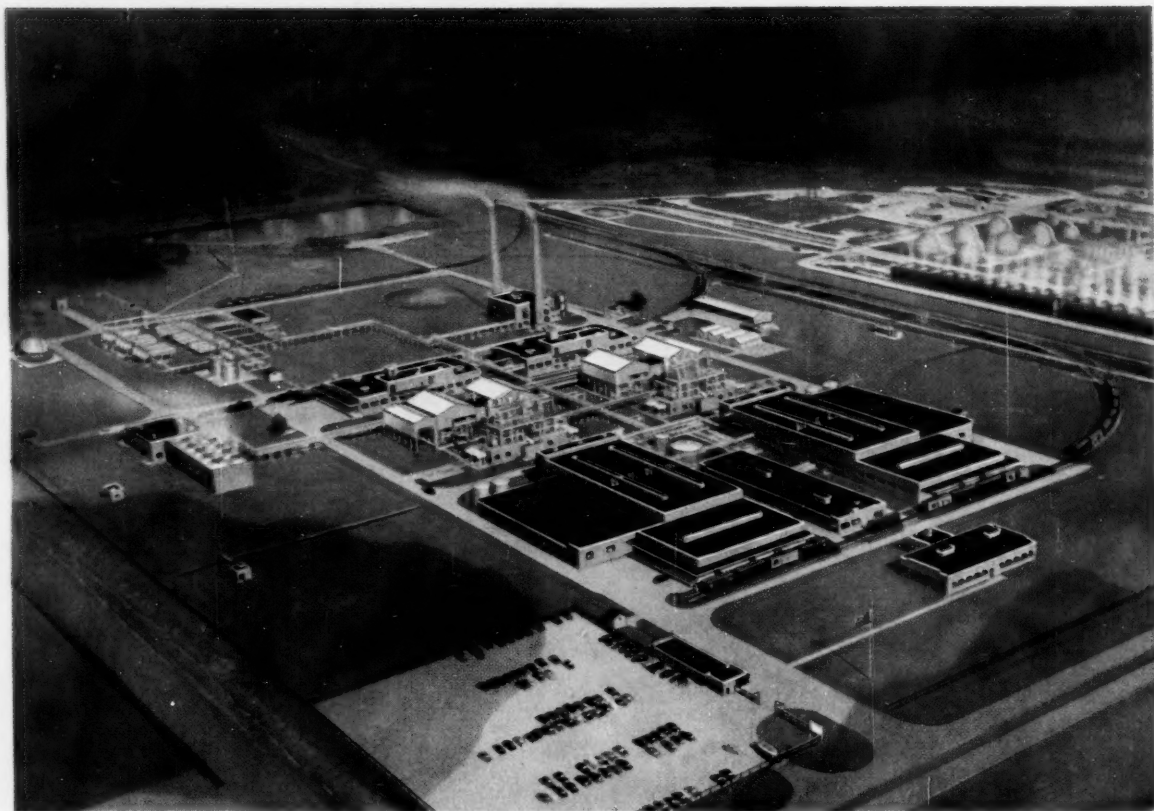


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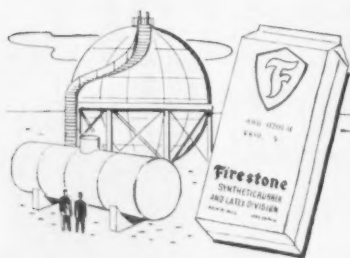
Firestone, world's largest rubber producer, expands its synthetic rubber program

Today rubber consumption is at an all-time high and Firestone is straining every facility to make more high quality rubber and latex to meet the tremendous demand. The synthetic rubber plants, at Lake Charles and Akron, are working 'round the clock and Firestone is planning ahead . . . a multi-million dollar expansion program will soon increase the production capacity of Firestone synthetic by nearly 50%.

Synthetic rubber is not new to Firestone . . . even before Pearl Harbor, while the entire rubber industry was frantically working on a substitute for natural rubber, Firestone scientists had actually produced the same synthetic rubber which eventually became GRS.

Then in April 1942, Firestone began operation of the first government synthetic plant. Since that time, these same research scientists have been constantly striving to make a better rubber. The latest achievement of Firestone scientists is a chemical duplication of natural rubber, the life-long goal of research chemists.

Look to Firestone for all your rubber needs. With over 30 years' experience gained from the operation of its vast Liberian Plantation and its aggressive research in synthetic rubber, Firestone is better equipped to meet your problems. A Firestone Technical Representative will be glad to work with you. Phone or write Firestone, Synthetic Rubber and Latex Division, Akron, Ohio.



Firestone

BEST IN RUBBER



Technology

Newsletter

CHEMICAL WEEK

March 10, 1956

The nation's first privately financed atomic electric power will probably be generated in 1957 from a plant in the Livermore-Pleasanton, Calif., area (40 miles southeast of San Francisco) to be operated jointly by General Electric, and Pacific Gas and Electric Co. Application has already been made for a facility license to cover an experimental reactor that will supply steam for the turbine-generator. The reactor will be part of an atomic laboratory GE plans to build on a 1,658-acre site near Pleasanton; GE will be responsible for integration of the nuclear phases of the power plant.

PG&E expects the experimental setup to contribute 5,000 kw. of electric power to its transmission network.

A boiling-water type, the Pleasanton reactor will serve as a pilot model for the 180,000-kw. power plant—which will rely exclusively on nuclear fuel—to be built near Chicago by GE for Nuclear Power Group (*CW*, Feb. 4, p. 50). The latter comprises Bechtel Corp. and seven utility companies. This plant, also privately financed, is expected to go into operation during 1960.

A new chemical reactor developed at the California Institute of Technology (Pasadena) was revealed by CIT's Bruce Sage and Paul Longwell at last week's Los Angeles meeting of the American Institute of Chemical Engineers. Called a "ballistics piston," it has produced temperatures up to 10,000 F and pressures up to 100,000 psi. in research (sponsored jointly by Texaco and Hercules Powder) on gas-phase reaction kinetics.

Heart of the device is a stellite-faced piston (weighing about 31 lbs.) confined in a long thin tube of carbon steel. How it works: gaseous reactants are introduced into the space below the piston—the reaction chamber; compressed air goes into the space above the piston. The piston is released by shearing a retaining pin.

High temperatures and pressures are attained under compression in about 0.0005 second. In another 0.0005 second, the piston rebounds, pressure is off, and the gas returns to room temperature. Result: the reaction, which is only partly completed, is "frozen" at its peak (i.e., when it is moving fastest)—and the products at this critical stage can be recovered for study.

It's still too early to tell what products can be made this way. Sage and Longwell have worked mostly on a two-component system of helium and carbon dioxide in their brief experience with the reactor, expect to discuss the equipment in more detail in another year.

While the new reactor is strictly a laboratory tool, it could prove to be a highly important one. The CIT researchers feel their fundamental work on free radical reactions is turning up knowledge that may be useful in building future chemical plants. The Russians have recently published similar studies on nitrogen-hydrogen and nitrogen-oxygen systems. And French chemists have tried reciprocating engines (not free pistons) for making organics—patents on which polyethylene process-development scramble?

Wondering how GE's irradiated polyethylene is faring in the frenetic date back to the '30s.

The company is now producing a top-capacity 2½ tons/week of irradiated polyethylene insulating tape at Pittsfield, Mass., with the aid of a new

Technology

Newsletter

(Continued)

radiation beam-scanning device that permits utilization of nearly 100% of available radiation. GE uses a 1-million-electron-volt resonance transformer to provide the resin-cross-linking electron beam, will shortly boost the current from 2 to 3 milliamps in order to speed production.

GE's biggest customer to date: Superior Cable Corp. (Hickory, N.C.), which uses the film to wrap the individual wires in telephone cables. Because of its better resistance to the heat generated in extrusion of cable jackets, irradiated polyethylene is replacing vinyls in this application.

You can expect to hear more about an electric-arc metals-refining process reported at Brooklyn Polytech. chemistry seminar last week by Samuel Korman of Sheer-Korman Associates, Inc. (New York). The method is said to be attractive as a means of winnowing vital metals (manganese, uranium, beryllium, lithium, etc.) from some hard-to-process domestic ores.

Here's the idea: the ore (e.g., rhodonite, spodumene, ilmenite, euxenite, beryl, etc.) is formed into an anode—cathode is graphite—for a high-intensity electrical discharge that produces temperatures of 13,000-18,000 F. Ore is decomposed directly to a vapor mixture of simple metallic oxides, which can be separated by physical or chemical methods.

Steelmakers, who import manganese from Asia and South America, might find the technique worthy of further investigation on the chance that it will prove a match for rhodonite, an American ore that so far has resisted efforts to recover its 35% of manganese.

American Potash and Chemical Corp. (Los Angeles) is about to start semicommercial (tonnage) production of lithium fluoride, anhydrous lithium chloride, lithium bromide monohydrate and electrolytic lithium metal (from the chloride salt). It will make the fluoride, chloride and bromide from either lithium carbonate—which it has produced at Trona, Calif., since 1952—or lithium hydroxide from the recently onstream American Lithium Chemicals plant at San Antonio, Tex. American Potash is a long-time producer of concentrated lithium bromide (52-54%) and lithium chloride (35-45%) brines at Trona.

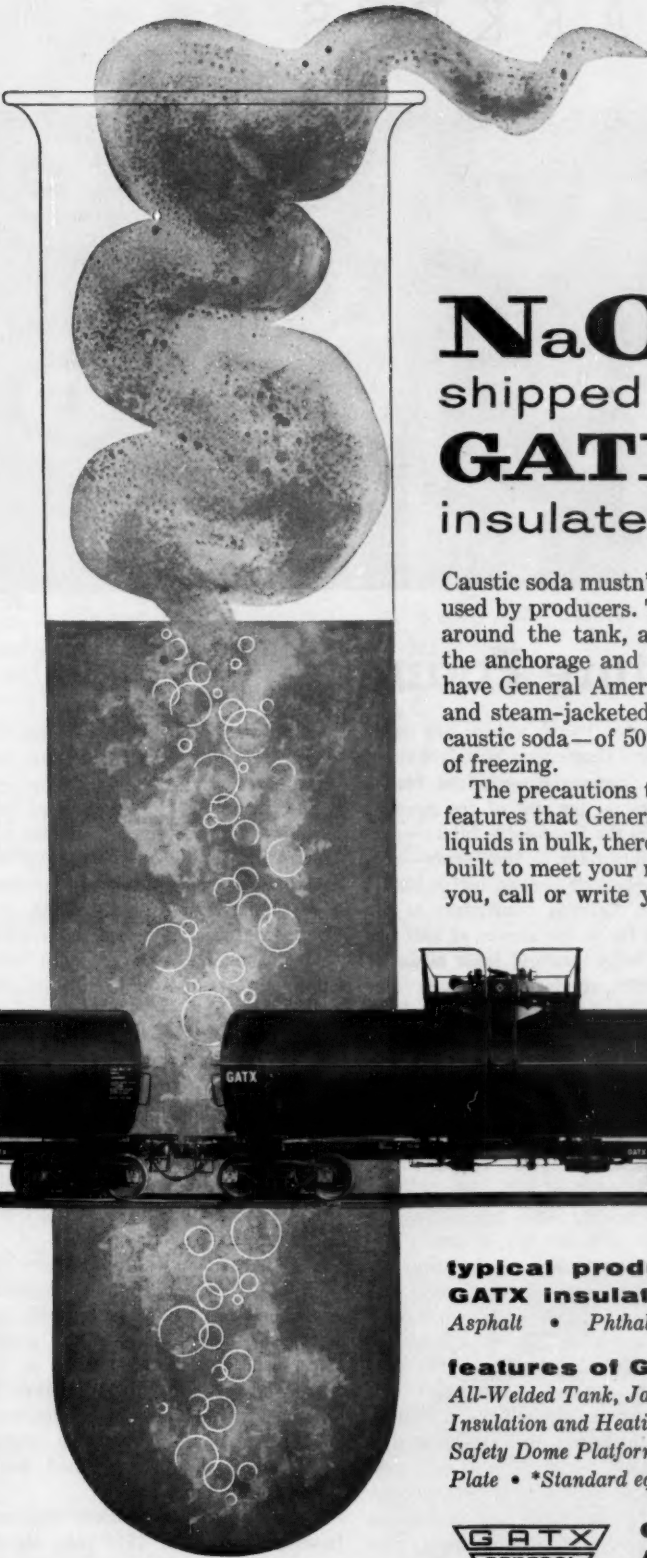
Other producers of lithium fluoride and solid-phase lithium bromide and chloride are Maywood Chemical Works (Maywood, N.J.) and Lithium Corp. of America (Minneapolis).

Increasing complaints from leading scientists that government red tape is hampering research have sparked a Congressional subcommittee hearing.

Beginning this week, the House Government Operations group, headed by Rep. John E. Moss, Jr. (D., Calif.), will be looking into government information policies. According to Moss, the hearings will be in the nature of "an informal discussion on the availability of scientific and technical information."

Moss reveals that a growing number of scientists feel that "federal laws, rules and regulations are hampering them in their effort to keep the United States in the forefront in the scientific field."

Hercules' new \$2-million methanol plant (see CW Business Newsletter) will be the first in the U.S. to utilize the Swiss Inventa process for the production of methanol. Construction will get under way late this spring, and is scheduled for completion by mid-1957. Vulcan Copper and Supply Co. (Cincinnati) has been awarded the engineering and construction contract.

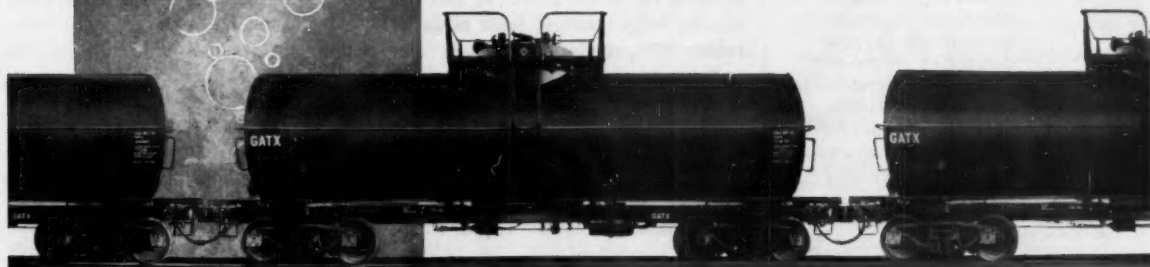


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The precautions taken to protect caustic soda are typical of the features that General American builds into tank cars. If you ship liquids in bulk, there's a General American car that's built or can be built to meet your needs. To learn how GATX tank cars can help you, call or write your nearby General American district office.



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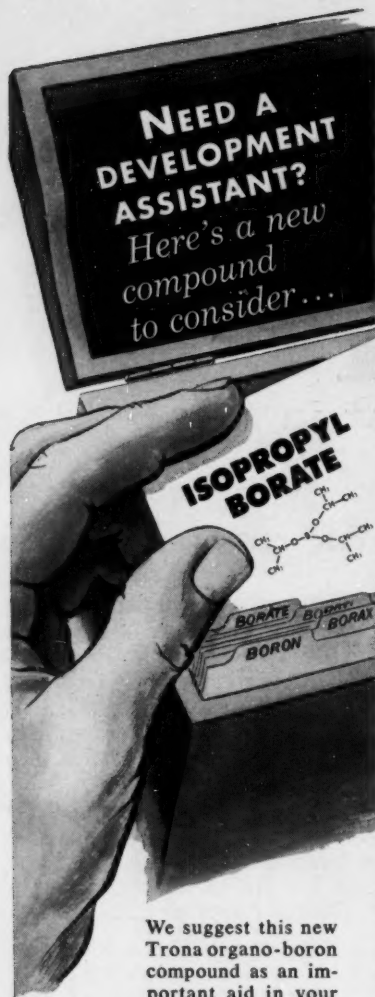
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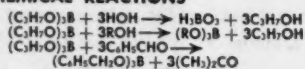


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CHEMICAL REACTIONS



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MARKETS

RESILIENT FOAMS ARE GROWING FAST

estimated 1960 output:

Foamed latex
300 million lbs.

Vinyl foam

125 million lbs.

Urethane foam
100 million lbs.

Future Foam-Up

Right now there's a three-way battle for outlets shaping up in a field that's literally burgeoning—resilient foams. Estimates on the size of the growing market in the foreseeable future—perhaps within three or four years—generally scale well beyond half a billion lbs./year. Leading contenders at the moment for major shares of that upcoming hefty nonrigid foam business: rubber latex, vinyls, urethanes.

Precisely how large foams have grown in the U.S. to date is obscure since there are no official data available on production, sales or consumption. "Guesstimates," though, are as rife—and as varied—as the long list of chemical companies, rubber firms, foam formulators and end product makers striving and researching to come up with the big winner.

One estimate not too heartily disputed pegs total latex, vinyl and urethane soft-foam output last year somewhere in a 230-250-million-lbs. range. This would indicate that production by the end of the decade will be at least double today's output.

First in Foam: Rubber latex, the old-timer of the three resilient types, has been, and continues to be, way out front in point of use and output. In less than 10 years, for example, production has been on a hop, skip and jump binge: in 1947, some 18 million lbs. were made; by '53, the production rate exceeded 160 million lbs./year;

and by the following year, most industry estimates agree, it topped 185 million.

But the closer to the present one gets, the more divergent opinions become. Thus the '55 figure for foamed latex, according to some market analysts, tallies about 225 million lbs. There are others, though, who insist that production over the past year or so has reached as high as a 240 million lbs./year rate.

Few will disagree, however, on the relative market status of the vinyl and urethane foams. Production of the former during '55 probably did not hit much over 4 or 5 million lbs., while urethane foam (also called polyurethane, isocyanate and polyester foam) trailed the vinyl product by a million lbs. or so.

How the race will be progressing in 1960 is wide open to conjecture. It's conceded that latex will still be setting the pace, but you can easily pick up half a dozen guesses as to how much of the foam market it will be carrying. One reckoning, and perhaps a conservative one: about 300 million lbs./year foamed latex consumption then.

A recurring polyurethane resilient foam prediction for 1960 puts use at approximately 100 million lbs.—a nearly 25-fold increase over this year's probable rate of production.

Vinyl foam boosters envision an

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*available in large quantities at
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a report by LINDSAY

You have probably always thought that rare earths are really rare. Some of them are very rare and very, very costly.

Fortunately, however, rare earth chloride is readily available in commercial quantities (and we mean carloads) to serve a wide variety of industrial uses. It is one of the most economical sources of rare earths, some grades costing in quantity lots approximately 30¢ per pound.

Rare earth chloride is a natural mixture of hydrated rare earth chlorides produced from monazite ore. It contains chiefly the chlorides of cerium, lanthanum, neodymium, and praseodymium with smaller amounts of samarium, gadolinium, and less-common rare earth chlorides.

The rare earths are trivalent metals, and rare earth chloride is an excellent source, and an economical source, of these heavy metals. It is a water-soluble salt showing relatively little hydrolysis. Like most other rare earth salts, its basicity is generally like that of calcium salts.

• • • •

When you flick your cigarette lighter, you are using misch metal (the stuff of which lighter flints are

made) and this is produced from rare earth chlorides. Misch metal itself is used as an additive in many grades of steel.

It's a versatile material, this rare earth chloride — it is used in paint and ink driers, as an anti-corrosive treatment for filter cloths, and in many other applications.

This unique material (there is nothing else quite like it) is challenging the imagination of research people in a wide variety of industries. Some see it as a possible replacement for other, higher cost materials. Others are exploring it with a view to improving production processes, enhancing product quality, and developing by-products.

Here are just a few of the many uses of rare earth chlorides. You

are certain to discover others.

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You may have research projects or production processes in which rare earth chloride could be of help. To satisfy a researcher's insatiable curiosity, or to appraise its potentials in your operations, it will reward you to talk with us about rare earth chlorides. We'll be happy to send you technical data and a typical analysis.

Photos show latest addition to Lindsay monazite processing plant at West Chicago and a car being loaded with rare earth chloride for shipment to a Lindsay customer.



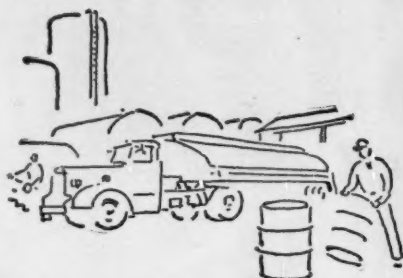
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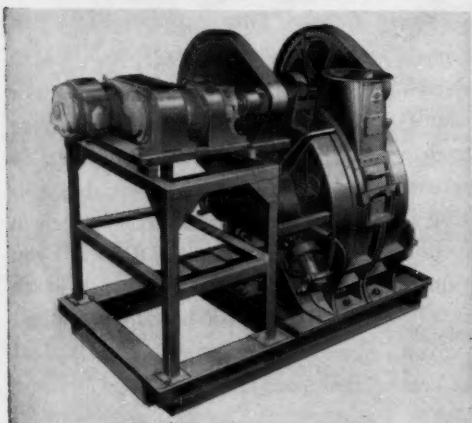


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MARKETS

even greater stride toward the big time, insist that the nonrigid vinyl product will be turned out at a more than 120-125 million lbs./year clip by '60. And doubtlessly the foam made then will outclass any on the market today.

Already there's a hectic bustling in the vinyl industry to develop a resin specifically for foams. Currently, standard plastisol resins are used by the foam makers, but chances are vinyl foam use would broaden significantly if a tailored resin were available. Actually, such a development may not be too far off, with not only the country's basic resin makers but also leading foam formulators working on the problem.

Perhaps in the forefront of vinyl foam pushers is Elastomer Chemical of Newark, N.J. For the past eight or nine years, the company has been developing and exploiting its own method of foaming a vinyl plastisol; and today the list of Elastomer Process licensees (both production and experimental) in the U.S., Canada and overseas reads like a veritable who's who in the foam and chemical industries.

Elastomer candidly admits that through this system of licensing, in which production and marketing of its Vinylfoam is assigned to others, the ultimate consumers are getting foam at a much lower price than they would if Elastomer itself undertook making and selling the material independently. And price is, and will be, a vital factor in slicing out sizable shares of the



FOAMED RUBBER OUTLETS: Many shape

rapidly expanding foam market.

How Much? It's difficult to make accurate cost comparisons between the three foams since the finished items are used unit- or volume-wise and the raw materials for the foams are bought by the pound. However, by applying like factors (identical resiliency, length, etc.) to latex, vinyl and urethane foams for a specific end-use application, it's possible to come up with a not-too-rough comparative picture:

On a board-ft. basis, latex foam would cost 52¢; vinyl, 48¢; urethane, 45¢/board ft. Respective densities: 8 lbs./cu. ft., 6 lbs./cu. ft. and 3 lbs./cu. ft.

Lowering vinyl's 6-lb. density (to perhaps 4 lbs.) on commercially available material, incidentally, is another prime objective of the trade. (Already urethane's lightness—about half the weight, by volume, of other foams—has attracted the attention of a number of American airlines that are reportedly installing urethane seats and backs in passenger planes.)

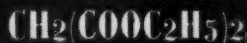
On the surface, it would appear that the older foamed latex could be elbowed right out of the market by the up and coming latter-day foams. Reason: it has some rather obvious disadvantages.

For one thing, foamed latex has a lower resistance to solvents and oils than do vinyl or polyurethane foams. Too, it costs more to process and fabricate. It's been estimated that the capital investment cost per unit volume of foamed latex produced runs



es—and eyed by newcomers vinyl and urethane.

KAY-FRIES DIETHYL MALONATE



KAY FRIES SPECIFICATIONS

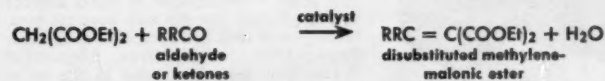
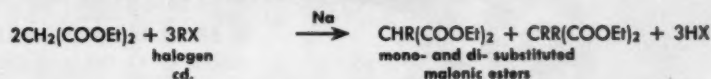
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An active methylene group in a dicarboxylic acid ester is of particular interest and has been responsible for much of its present use in the manufacture of pharmaceuticals, including barbiturates and anti-malarials.

TYPICAL REACTIONS



(Many substituted malonates may be hydrolyzed and decarboxylated to the corresponding subst. acetic esters.)



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MARKETS

about twice that for vinyl or urethane foam.

In the matter of formulation flexibility, latex also loses out to its competitors. Both the urethanes and vinyls offer greater ranges, with the vinyls, in particular, able to yield foams with a resilience varying from that of a very soft foam rubber to the firmest flexible sponge rubber.

And, unlike foamed latex, which is always "springy," elasticity of the other two can be controlled to produce a "dead" foam with high energy absorption. This characteristic is opening a potentially wide outlet in impact-absorbing crash pads on automobile dashboards and sun visors. It's likely that within a few years such safety features will be standard equipment on all American cars.

Another area where latex lags is in fire resistance. Although difficult to set on fire, the material is said to readily support combustion, while vinyl and urethane foams can be easily compounded not to.

Eyes Ahead: Despite these and other possible sales deterrents, foamed latex is expected to retain the top market spot for a good many years. As previously noted, consumption in less than a decade has increased to well over 200 million lbs./year, mostly for bedding, mattresses, pillows, furniture cushioning and upholstery backing, automobile seats and a host of other outlets.

Significant, nonetheless, and an impressive augur for continuing expansion, is this: latex foams probably haven't tapped more than 20% of the potential in these outlets.

Further, there are many foam spheres untouched by latex, in which the vinyl and urethane characteristics are proving admirably suited. A few: crash pads, armrests, wearing apparel (e.g., shoulder pads that need not be removed when the garment is cleaned, lightweight insulation for coats and jackets), rug underlays, heat and acoustical insulation purposes.

Thus market prognosticators who envision a bulky 500-600-million-lbs. foam market by 1960 may not be too far off. And this too seems certain: difference in properties between latex, vinyl and polyurethane foams will likely ensure each a sizable share of that market, but there'll be some intense competition between the three in not a few areas of use.

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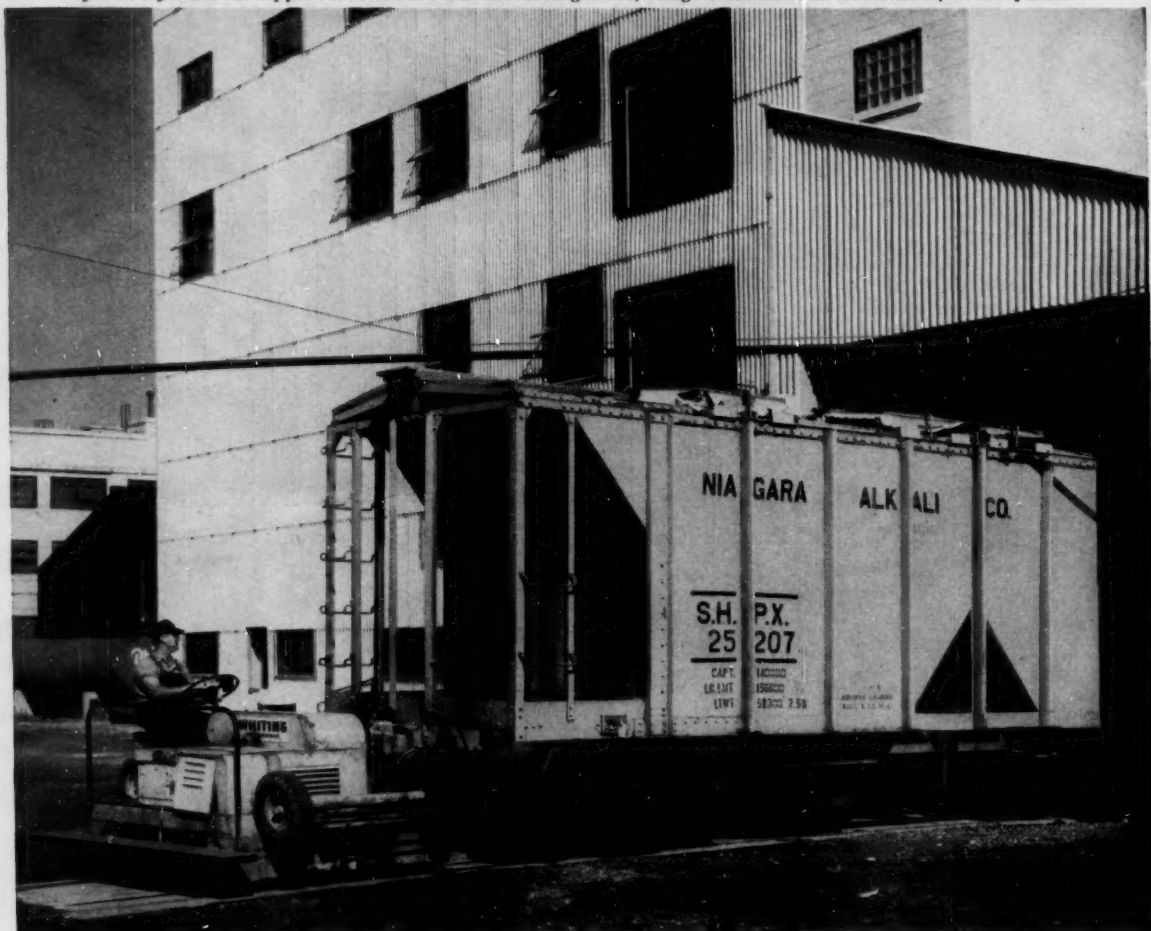
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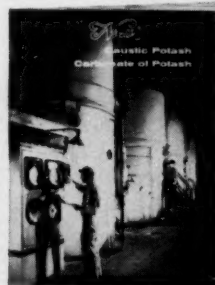
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Market Newsletter

CHEMICAL WEEK

March 10, 1956

Tacit admission that U.S. sulfur is facing stiffening competition—especially from mounting Mexican sulfur supplies—came last fortnight in the form of Freeport Sulfur's \$3/ton cut of export prices. The long-awaited move (not yet industry-wide) shaves off the differential between domestic and export prices, pegs both at \$28/ton.

Other U.S. sulfur producers are stalling as long as possible, apparently hoping that Freeport will change its mind and return to the old schedule—and, given sufficient reason, the latter firm will do just that. But finding a reason to re-establish the higher export tag is apt to be difficult because of the growing domestic as well as foreign competition. Unofficial trade estimates place current Mexican sulfur output at about 500,000 tons/year, and indicate a possible year-end doubling of this rate.

Competition in Canada, too, is being encountered by the Texas sulfur industry, according to an Alberta government report. The Dept. of Economic Affairs officially reports that "the production of sulfur from natural gas is rapidly becoming an important industry in Alberta, providing paper companies, sugar and uranium refineries and other factories with the much needed mineral."

Annual sulfur capacity of Shell Oil of Canada's Jumping Pound plant (*CW*, Oct. 8, '55, p. 81) was recently increased from 33,000 long tons to approximately 80,000 tons. And Royalite Oil Co.'s plant capacity (at Turner Valley) is now estimated at more than 30 long tons/day of sulfur.

Newest arrival to the Alberta sulfur scene is Canadian Oil Co., which is constructing a \$4-million recovery plant at Pincher Creek; its initial capacity is rated at 225 tons/day—making it the largest in Canada.

Alberta's sulfur production increased from 16,075 tons in '52 to 22,320 tons in '54. For the first 10 months of '55, production was 22,713 tons, with output for the year estimated at 29,000 tons.

Supply and demand of sulfur in this country are now in fairly good balance, and demand continues to climb; but no one seems ready to predict that last year's 10% increase in sulfur needs will repeat this year, and this despite expectations of another 6-7% hike in sulfuric acid production. All in all, a cautious wait-and-see attitude prevails throughout the sulfur industry, and what will happen to export—and domestic—prices in the next six months is anybody's guess.

Prices of acrylic products tumble again. The latest cuts, ranging up to 9½%, affect Rohm & Haas Plexiglas sheet, Plexiglas molding powders, and methyl methacrylate monomer—follow other decreases made in December by R&H, and somewhat later by Du Pont (*CW Market Newsletter*, Dec. 24-31, '55).

Standard grades of injection molding powders are down 4¢/lb. for truckload quantities. New prices: 55¢/lb. for colorless, 59¢/lb. for colors; in 1,000-lb. containers tabs are ½¢/lb. less than list.

Methyl methacrylate monomer is reduced from 32¢ to 29¢/lb. in tank-car and tank-truck quantities; c.l. (drums) prices are down 3¢/lb. to 31¢, f.o.b. Bristol, Pa., or Knoxville, Tenn.

Sheet price reductions—ranging from 3% to about 9½%—apply to Plexiglas R, II and IA, in thicknesses of 0.100 in. and over.

And it will come as no surprise that Du Pont is revising prices of its corresponding acrylic products.

Market Newsletter

(Continued)

Matching Rohm & Haas, Du Pont is dropping methyl methacrylate monomer price by 3¢/lb., to 29¢/lb. in tank-car and tank-truck orders.

Down 4¢ are Lucite 129, 130 and 140 molding powders, now tagged at 55¢/lb.; Lucite granular powders for extrusion, down the same amount, are priced at 51¢/lb. Both quotes apply to shipments of 1,000 lbs. or more.

More ethyl alcohol—as pure anhydrous, denatured, and proprietary solvent material—is available to customers of U.S. Industrial Chemicals as operation of the firm's new Tuscola, Ill., anhydrous alcohol unit gets under way.

Some unsaturated fatty alcohols, available for the first time in commercial quantities from Archer-Daniels-Midland, will be of special interest to makers of protective coatings, resins, and surface-active agents.

Linoleyl alcohol, containing two double bonds, is the principal component of a product to be sold under the name of Unadol 40; linolenyl alcohol, a three double-bond compound, makes up the bulk of Unadol 90.

Price cuts on polyvinyl alcohol follow a doubling of plant capacity by one producer. Last month, Du Pont announced that its new unit at Niagara Falls had been brought onstream ahead of schedule (*CW Market Newsletter*, Feb. 11). Now the firm is shaving an average of 6½% off the prices of six grades of the water-soluble resin. Reasons given: improved manufacturing efficiency, expanding markets.

The 6% freight rate hike that went into effect last Wednesday may well set off a rash of price increases throughout the chemical industry. Buyers of heavy chemicals on an f.o.b. basis (e.g., sulfuric acid, nitric acid, muriatic acid, alkalis and other heavy inorganics) will, of course, absorb the hikes; but they will as surely pass along the boosts wherever possible.

Exceptions to the across-the-board 6% increase are the boosts in charges on phosphate rock (including phosphate clay salt), which are limited to 30¢/ton, and on potash and potash fertilizers with maximum allowable hikes of 50¢/ton.

There's a chance, however, that in the phosphate and fertilizer industries price changes will not come soon. Spot checks in the trade indicate that most observers feel "the market won't be receptive to increases at this time." But trade spokesmen are quick to add that price adjustments are, nonetheless, under consideration, may come later if the supply/demand situation permits changes.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending March 5, 1956

DOWN

	Change	New Price
Methyl methacrylate, t.l., frt. alld.	\$0.03	\$0.29
Sodium stannate, dms., works, frt. alld. E	0.02	0.582
Silver cyanide, fib. dms., 2,500-oz. lots, oz.	0.006	0.84125
Silver chloride	0.006	0.8287
Silver oxide	0.007	0.9063
Tallow, inedible, extra, tanks dlvd.	0.0012	0.0712

All prices per pound unless quantity is stated.

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*Conoco H-300 was formerly called Conoco H-340. The change in name does not affect the quality of the product in any respect whatsoever. Chemical properties of Conoco H-300 remain the same.

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Tough Decision at the Finish Line

A pair of new coatings are now in competition for the \$80-million auto paint market. One is an alkyd; the other a lacquer. Both are premium priced, share a number of advantages such as resistance to fading, marring and discoloration. Potential applications appear to range throughout industry.

What do you do when the biggest firm in your field makes a bid to capitalize on a couple of new products—and starts sinking millions into plants to manufacture these new products?

You try to match product for product—and that's what started the hottest fight in 20 years in the \$80-million/year automobile finish business.

Du Pont, largest supplier of auto paints, touched it off a few weeks ago when it brought out its new Dulux 100 and Lucite finishes (*CW*, Jan. 21, p. 74). Already, the half-dozen other firms that compete for auto paint leadership have readied similar coatings in an attempt to maintain their positions.

Particularly significant, say trade sources, is the fact that Du Pont is in a position to supply Dulux 100 in quantity right now. (The Lucite lacquer is available in limited amounts.) Dulux 100 is an alkyd-type synthetic enamel, and it's felt that Du Pont,

already a prime supplier of lacquer-buying General Motors, is now making its strongest bid for the favor of enamel-buying Ford (which has been making its own paints, as well as buying heavily from Rinsed-Mason). Plainly, it will be a gloves-off fight.

Big advantages of the new finishes are resistance to marring on production lines and to rebaking discoloration. On the other hand, they are somewhat expensive. The alkyd types are relatively costly because of their high melamine content (up to 30% of resin solids, instead of the now-common 10-15%). And the all-acrylic lacquer is made with a familiar resin that has never had a big market in coatings, largely because of its high cost.

Makers of the new coatings point out that their products' attributes stand to make them as economical to use as conventional finishes. There's no getting around the fact, however, that certain dealers in some areas are

charging customers up to \$50 extra for autos carrying the new finishes.

It's one firm's opinion that only the high-income level of the population in general is making the new materials possible. It feels that present finishes are satisfactory, but auto ad men want a changeover for new sales ammunition—and it's fortunate the public is in a position to pay for it.

(Early publicity for the paints stressed: "Cars need no waxing for 18 months," which has annoyed more than worried polish makers, who know prideful owners do everything possible to enhance their cars' shine.)

Within a Month: So far, Du Pont and Canadian Industries Ltd. are the only two firms with publicly announced alkyd-type auto finishes. But General Electric will have a resin suitable for paints of this type within a month, and Pittsburgh Plate Glass, Sherwin-Williams, Jones-Dabney and Cook Paint and Varnish (among others) will soon have them, too.

Big changes in the new alkyds are the boosted melamine* content as well as the use of nondrying oil resins (i.e., alkyds made with oils such as coconut, rather than linseed, for ex-

*Leading suppliers include American Cyanamid, Monsanto, Barrett's Plaskon Division.



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SPECIALTIES.

ample). Moreover, certain pigments that have limited color stability in older vehicles appear to be satisfactory in the new vehicles.

They bake at moderately high (but not unusual) temperatures, reportedly produce a finish that is about as hard (when it leaves the oven) as drying-oil films that have aged several months. Some firms say the new vehicles give a slightly brittle finish, initially. But nondrying-oil films increase in brittleness on aging less than do drying-oil films—hence there is often less chalking of the finish.

Because nondrying-oil vehicles cure only on baking, they are likely not to be offered to auto refinishers. Only manufacturers will have facilities (e.g., temperature-controlled ovens) to paint and retouch these new materials.

Cost vs. Convenience: In the case of the new acrylic lacquers, body-shop refinishing seems a sure bet, although supplies of the coatings are now so limited that no refinishing shops have them. It's likely acrylic acceptance will be hampered more by cost than anything else.

Du Pont is in the fortunate position of being a primary source of the acrylic resins, so it may be able to price its finished lacquers competitively with nitrocellulose lacquers. The firm's decision to start construction of Lucite manufacturing plants (the new acrylic lacquer has the same trade-name as the firm's acrylic plastics) at Flint, Mich., Parlin, N. J., and South San Francisco indicates it thinks price won't be a handicap of great moment.

Acrylic lacquers, of course, aren't brand-new in themselves. Another large maker of acrylic plastics has offered resins, along with suggested

formulations, for years. Where they have been used in auto painting, it is generally in combination with nitrocellulose resins—the two are compatible, use the same solvents.

Du Pont, however, claims to have something new in formulations. And it says Lucite requires new undercoating materials, which was not true of older acrylic-nitrocellulose lacquer.

There is some thought in the trade that Du Pont's sharpest competition in new lacquers will come from firms combining acrylics with nitrocellulose. The Navy has been working with a durable lacquer for aircraft use, made with acrylic, alkyds and nitrocellulose (formulas high in resistance to synthetic hydraulic fluids). It's felt in some circles that the nitrocellulose gives a harder finish to the lacquer, speeds drying time, and prevents pigment-settling, which might otherwise trouble acrylic lacquers.

Buff or Not: Because the acrylic lacquers, like nitrocellulose finishes, need buffing, they may not have application as broad as the new modified alkyds. The enamels, in fact, were first proved out on such appliances as refrigerators and washers; now that they're coming out in quantity, you can expect application to metal toys, farm implements, garden tools, etc.

It seems plain that cost is about the only major impediment to the rapid assimilation of the new finishes. And it's also clear that the debate on the relative merits of lacquer and alkyd automobile finishes will remain unsettled—the decision facing the auto maker on which finish to use, and the decision the auto buyer must make on which finish will last longer is tougher to make than it ever was.

Touching Up with Acrylics

ONE PUBLISHED recipe for an acrylic topcoat employs methyl methacrylate (29.74 parts by weight), dibutyl phthalate (11.93 parts), along with titanium dioxide (7.16), carbon black (0.07 part), ferrite yellow (0.98 part), and red iron oxide (0.12 part) in a half-and-half toluol-xylol solvent (50 parts). This appears to work

best with this undercoat—40% solution of lacquer-grade nitrocellulose (28.4 parts), dicyclohexylphthalate (3.7 parts) and solvent (67.9 parts)—over a primer of lacquer-grade nitrocellulose (25-50%), shellac (20-55%), and either polyvinyl butyral (3-20%) or a plasticizer (up to 50%). These formulas are for touch-up work.



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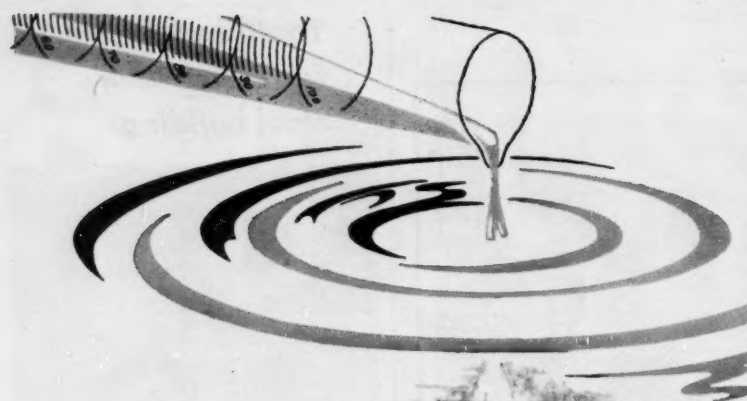
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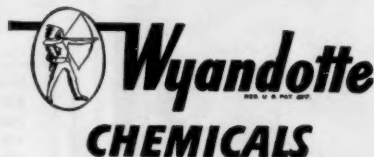
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SPECIALTIES

Fungicide Guide: The National Research Council (Washington, D.C.) needs industry's aid—it's assembling a comprehensive list of industrial (not agricultural or medical) fungicides. To insure completeness, manufacturers are requested to send trade and chemical names to the council, at the National Academy of Sciences, 2101 Constitution Ave., Washington 25, D.C.

Budworm Battle: Canada's arming itself for the coming battle with spruce budworm in its forests. Operations, in the Eastern provinces, will begin about May or June, and some 90 airplanes will apply the 1.2 million gal. of insecticide (largely DDT).

Recipe Books: Specialties makers looking for new formulations and products will want to check with:

- Chemical Specialties Research Laboratories (New York), which has just issued its latest catalog of formulas for such specialties as rust removers, shaving creams, oven cleaners, fur glazers.

- Glyco Products Co. (New York), which has a new Drug and Cosmetic Manual. Recipes for creams, lotions and shampoos are included.

Trace Detectors: Bioassay method of detecting insecticide residues has been outlined by Agricultural Research Service of the U.S. Dept. of Agriculture—it makes use of an easily reared sea crustacean called *Artemia salina* (or brine shrimp). The ARS says the eggs of the shrimp are available at most tropical-fish stores, and can be stored for several years without losing viability. They are easy to hatch and rear, and detect minute (as little as 0.01 parts per million) residues of such compounds as DDT, Lindane, methoxychlor. Full story on how to raise and use the shrimp is contained in ARS Bulletin ARS-33-15 (Feb. '56)

Campaign Notes: Lever's Pepsodent toothpaste is getting a strong new pitch that emphasizes a new formulation of the dentifrice and extensive premium usage. Main change in formula: use of I.M.P.—insoluble sodium metaphosphate—as polishing and cleansing agent, along with dicalcium phosphate. I.M.P. is said to be less

abrasive than most dentifrice polishing agents.

• d-Con Co. (Chicago) is budgeting a \$0.5-million advertising campaign for its rug and upholstery cleaner, M-O-Lene. Brief demonstration TV film strips will be used, plus newspaper and magazine space.

• **Name Change:** Arrow Laboratories, Inc. is the new name for American Maintenance Supply Co. The firm makes a special wax bead (Detaro) for use in the rubber and plastics industries.

PRODUCTS

• **No Scraping:** Creative Chemical Co. (Hazel Park, Mich.) is now selling what it terms is a new approach to paint removal, its R.P.O. (rinse paint off) compound. A liquid, R.P.O. is applied to the paint surface, permitted to stand 10-30 minutes. Then, the firm says, the paint can simply be rinsed off with water—no scraping is needed. Crevices and cracks are particularly simple to clean, Creative says. R.P.O. is designed to remove paints, varnishes, lacquers, enamels; it works on metal, wood, concrete and brick.

• **Pilot Production:** City Chemical Corp. (New York) is now producing pilot lots of these specialty raw materials: cadmium salicylate, calcium tetrphosphate, mercuric phosphate, nickel sulfamate, sebacanilide, and zinc salicylate.

• **Mercurial Dressings:** Gallowhur Chemical Corp. (Ossining, N.Y.) is now making a line of organic mercurial seed dressings: Puraseed (a combination of the mercurial with an organic cadmium compound), Gallotox (nonvolatile liquid) and Gallotox-51 (volatile liquid). The compounds will be distributed by Larvacide Products, Inc. (New York).

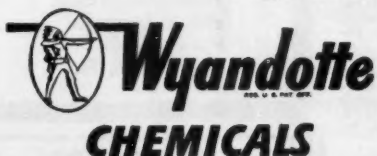
• **Coffee Off:** For removing coffee stains from china, plastic or metal cups and coffee makers, Reen'o Sales Corp. (St. Louis) offers Reen'o Coffee Stain Remover. It requires a few minutes in boiling water, releasing free oxygen to bleach and loosen stains. It is packaged in heat-sealed polyethylene pouches made by Dobeckmun Co. (Cleveland).

Calculating on a new product?

call on us

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PM561 Chemical Week
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P9479 Chemical Week
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P9466 Chemical Week
330 W. 42 St., New York 36, N.Y.

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Degree with inorganic major desirable. One to three years experience in analytical work or electro-plating—principally non-ferrous metal. Position involves work on anodizing, chemical brightening, and plating. Opportunity in expanding aluminum industry. Salary \$5,400 up.

P9533 Chemical Week
520 N. Michigan Ave., Chicago 11, Ill.

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for investigation of gas-solid reactions, chemical thermodynamics, reaction kinetics, surface chemistry and solid state physics. Chemistry majors at Phd, MSc and BSc will be considered for these positions.

Chemical Engineers for advanced process development work in Pilot Plant and Production Plant scale testing. Positions are in our process development program aimed at more efficient and more economical production of nuclear fuels for the various types of nuclear reactors now in operation and under consideration.

Positions also
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Engineers.

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address resume of education and experience
to Employment Supervisor.



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MARKET & ECONOMIC ANALYST

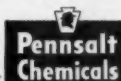
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Please submit complete resume, including salary requirements, in first letter for confidential handling to:



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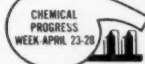


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